INTERNET NEWS

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e impact of coffee on health

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more

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stract

ective

ee is a beverage used worldwide. It includes a wide array of components th
nave potential implication on health. We have reviewed publications on th
act of coffee on a series of health outcomes.

hods

cles published between January 1990 and December 2012 were selected aft
sing coffee or caffeine with a list of keywords representative of the most re
th areas potentially affected by coffee intake.

ults

eine, chlorogenic acids and diterpenes are important components of coffe
rance often acts as a modulator of the biological actions of coffee. There is
ificant impact of coffee on the cardiovascular system, and on the metaboli
ohydrates and lipids. Contrary to previous beliefs, the various forms of art
iovascular disease, arrhythmia or heart insufficiency seem unaffected by c
ke. Coffee is associated with a reduction in the incidence of diabetes and li
ase. Protection seems to exist also for Parkinson's disease among the
rological disorders, while its potential as an osteoporosis risk factor is und
te. Its effect on cancer risk depends on the tissue concerned, although it
ears to favor risk reduction. Coffee consumption seems to reduce mortality

clusion

nformation gathered in recent years has generated a new concept of coffee, n does not match the common belief that coffee is mostly harmful. This view er supported by the discovery of a series of phyto-components with a ficial profile. Reasonable optimism needs to be tempered, however, by the fficiency of the clinical data, which in most cases stem from observational es.

SPREADS Monkeypox outbreak explodes across Europe
s in Spain and Italy traced to island festival with 80,00
llers

terou

ay 2022 | Updated: 2:03, 22 May 2022

EYPOX cases in Spain and Italy have been traced to an island
l attended by 80,000 revellers.

ities are trying to halt an outbreak that has exploded across
and beyond, with 92 cases now confirmed and dozens more
ted.

otal of 145 confirmed or suspected monkeypox cases have so far been recor
side places where it is endemic in Africa

ses of monkeypox in the UK have doubled in just a week after a total
cases were reported.

d doctors warned that number will rise significantly as the virus
eads througfh Europe and as far as the US, Canada and Australia.

ain now has the highest number of infections, outside places in Africa
ere the virus is endemic, with more than 50 known cases.

w authorities are investigating a festival in Gran Canaria after it was
ked with a number of cases in Madrid, Tenerife and Italy.

READ MORE ON HEALTH

VIRUS WARNING UK to have 'significant rise' of monkeypox cases, top doc says

VIRAL SPREAD Monkeypox patients could be infectious for up to FOUR WEEKS,...

Canaria Pride festival, held in the town of Maspalomas between Ma
15, has become a hotspot for the monkeypox outbreak, reports El

massive party was attended by over 80,000 people, including thre
an men who later tested positive for the virus.

ealth source told the newspaper: "Among the 30 or so diagnosed in
rid, there are several who attended the event, although it is not ye
sible to know if one of them is patient zero of this outbreak or if th
ot infected there."

lic health services are currently investigating whether there have b
e infections during the celebrations including a suspected case
ected in Tenerife.

— NEWS —

‘Unprecedented’, ‘Remarkable’: Cancer Study Leaves Every Patient Cancer-Free

“I believe this is the first time this has happened in the history of cancer."

By Amanda Prestigiacomo • Jun 6, 2022 DailyWire.com •

ults from a small cancer trial that left every patient in remission is being sed as “unprecedented” and “remarkable.”

aper published on Sunday at The New England Journal of Medicine ined a study of 18 rectal cancer patients who were given dostarlimab ry three weeks for six months and ended up cancer-free, including the first ent who is now two years out from the trial.

elieve this is the first time this has happened in the history of cancer,” said Luis A. Diaz Jr. said, an author of the paper, The New York Times reported.

Andrea Cercek, an oncologist at Memorial Sloan Kettering Cancer Center another author of the paper, described “a lot of happy tears” at the end of trial.

ile noting the study needs replication, Dr. Kimmie Ng, a colorectal cancer ert from the Dana-Farber Cancer Institute and an associate professor at vard University, called the trial results “remarkable” and “unprecedented.”

C Lineberger Comprehensive Cancer Center's Hanna K. Sanoff, MD, MPH
ised caution but said the findings were "very encouraging," according
cience Daily.

ese initial findings of the remarkable benefit with the use of dostarlimab
very encouraging but also need to be viewed with caution until the result
be replicated in a larger and more diverse population," Sanoff said.

e responses in these first 12 of a planned-for 30 patients in the trial were
arkable and exceed what we would expect with the standard
motherapy plus radiation," she continued. "Although quality of life
asures have not been reported yet, it's encouraging that some of the most
ucult symptoms, such as pain and bleeding, all resolved with the use of
tarlimab."

s post has been updated to note that Dr. Kimmie Ng is a colorectal cancer exper
n the Dana-Farber Cancer Institute, as well as an associate professor at Harvar
versity

e initiated a prospective phase 2 study in which single-agent dostarlima
anti–PD-1 monoclonal antibody, was administered every 3 weeks for 6
nths in patients with mismatch repair–deficient stage II or III rectal
nocarcinoma," the study said. "This treatment was to be followed by
ndard chemoradiotherapy and surgery."

ose who took the drug, which "unmasks cancer cells, allowing the immun
tem to identify and destroy them," according to the Times, did *not* have t
ve on to further cancer treatments.

the patients "had a clinical complete response, with no evidence of tumo
magnetic resonance imaging," the paper explained. "At the time of this
ort, no patients had received chemoradiotherapy or undergone surgery
l no cases of progression or recurrence had been reported during follow
nge, 6 to 25 months). No adverse events of grade 3 or higher have been
orted."

C Lineberger Comprehensive Cancer Center's Hanna K. Sanoff, MD, MP
ised caution but said the findings were "very encouraging," according
Science Daily.

Oncology/Hematology > Prostate Cancer

For Men on ADT, Checking Bone Density May Thwart Fractures

— But testing rates remain low among older prostate cancer patients on androgen deprivation therapy

by Mike Bassett, Staff Writer, MedPage Today April 1, 2022

e density testing in older prostate cancer patients on androgen deprivation apy (ADT) was significantly associated with a decreased risk for major oporotic fractures, but remains little used, a prospective population-based ly found.

he cohort of nearly 55,000 men treated with ADT from 2005 to 2015, those wh ived dual x-ray absorptiometry (DXA) screening had a 9% lower risk of major tures compared with those who did not (HR 0.91, 95% CI 0.83-1.00, *P*=0.05), r adjustment for previous fractures and history of osteoporosis, according to archers led by Maria Suarez-Almazor, MD, PhD, of MD Anderson Cancer Cente ouston.

r the study period, 17.5% of the men had fractures and 7.7% had major fracture just 7.9% received DXA screening, they reported in *JAMA Network Open*.

en the deleterious impact of fractures for morbidity and mortality, ementation strategies are needed to increase the uptake of current guideline one health management among men with prostate cancer," Suarez-Almazor colleagues concluded. "Early intervention with bone-modifying agents could ntially reduce the burden of illness associated with fractures among older me are survivors of prostate cancer."

group found several factors associated with lower DXA screening rates:

- Receiving nonsteroidal androgens (OR 0.57, 95% CI 0.39-0.84)
- Being single (OR 0.89, 95% CI 0.81-0.97)
- Black race (OR 0.80, 95% CI 0.70-0.91)
- Living in small urban areas (OR 0.77, 95% CI 0.66-0.90)
- Living in areas with lower educational levels (OR 0.75, 95% CI 0.67-0.83)

n accompanying editorial, Amar Kishan, MD, of the University of California Los eles, and colleagues noted that since the study's end, professional societies e updated their guidelines on DXA screening, suggesting that current bone sity screening rates may be higher. Over the study period, screening crept up n 6.8% in 2005 to 8.4% by 2015.

ever, the study "highlights the fact that there is substantial room for ovement in evaluating bone health among patients with prostate cancer ving ADT," according to the editorialists.

low rate of DXA screening and the disparities in the use of DXA screening are erning," wrote Kishan and colleagues. "It is particularly problematic that low s of DXA screening were identified among men who were non-Hispanic Black, e, or residing in areas with lower socioeconomic status and lower educational s, suggesting that more research into these patterns is needed to fully erstand the associated dynamics and implement appropriate strategies to ease bone health screening when indicated in these populations."

study from Suarez-Almazor's group was based on data from the Surveillance, emiology, and End Results database and the Texas Cancer Registry, which were d with Medicare claims. It included 54,953 men 66 years or older with prostate er who were diagnosed between January 2005 and December 2015 and who ated treatment with ADT.

t of the men were white (75.4%), while 11.1% were Black and 8.5% were anic. Of these, just 4,362 men received DXA screening, with rates among Black ents a particularly low 5.2%.

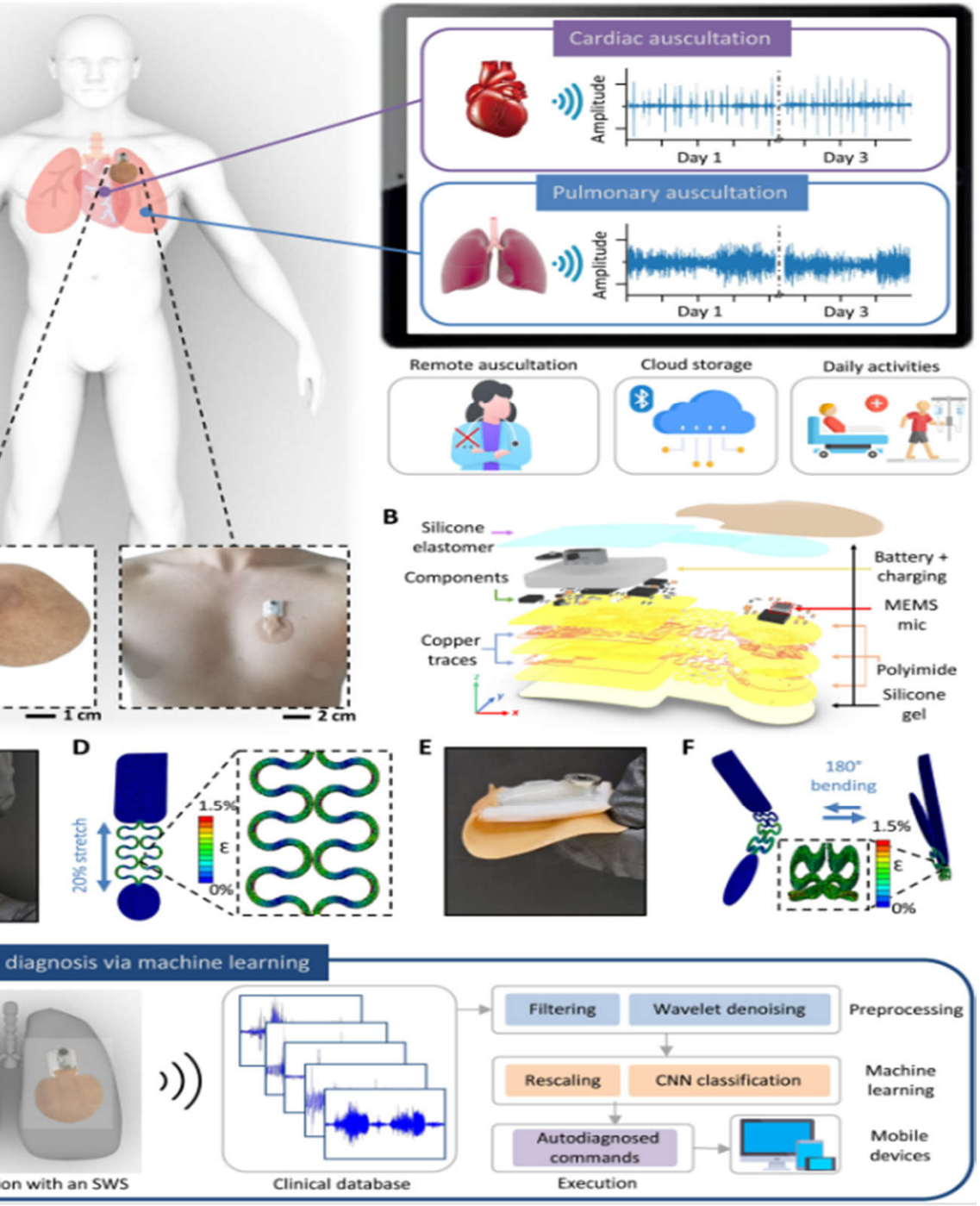
eneral, DXA screening was more prevalent among patients with a diagnosis of oporosis (n=1,526) or fractures (n=1,426) in the year before ADT initiation.

multivariable model including propensity score adjustment, Suarez-Almazor colleagues determined that previous DXA screening was not significantly ciated with a risk of fracture.

JUNE 3, 2022 FEATURE

A soft wearable stethoscope designed for automated remote disease diagnosis

by Thamarasee Jeewandara , Medical Xpress



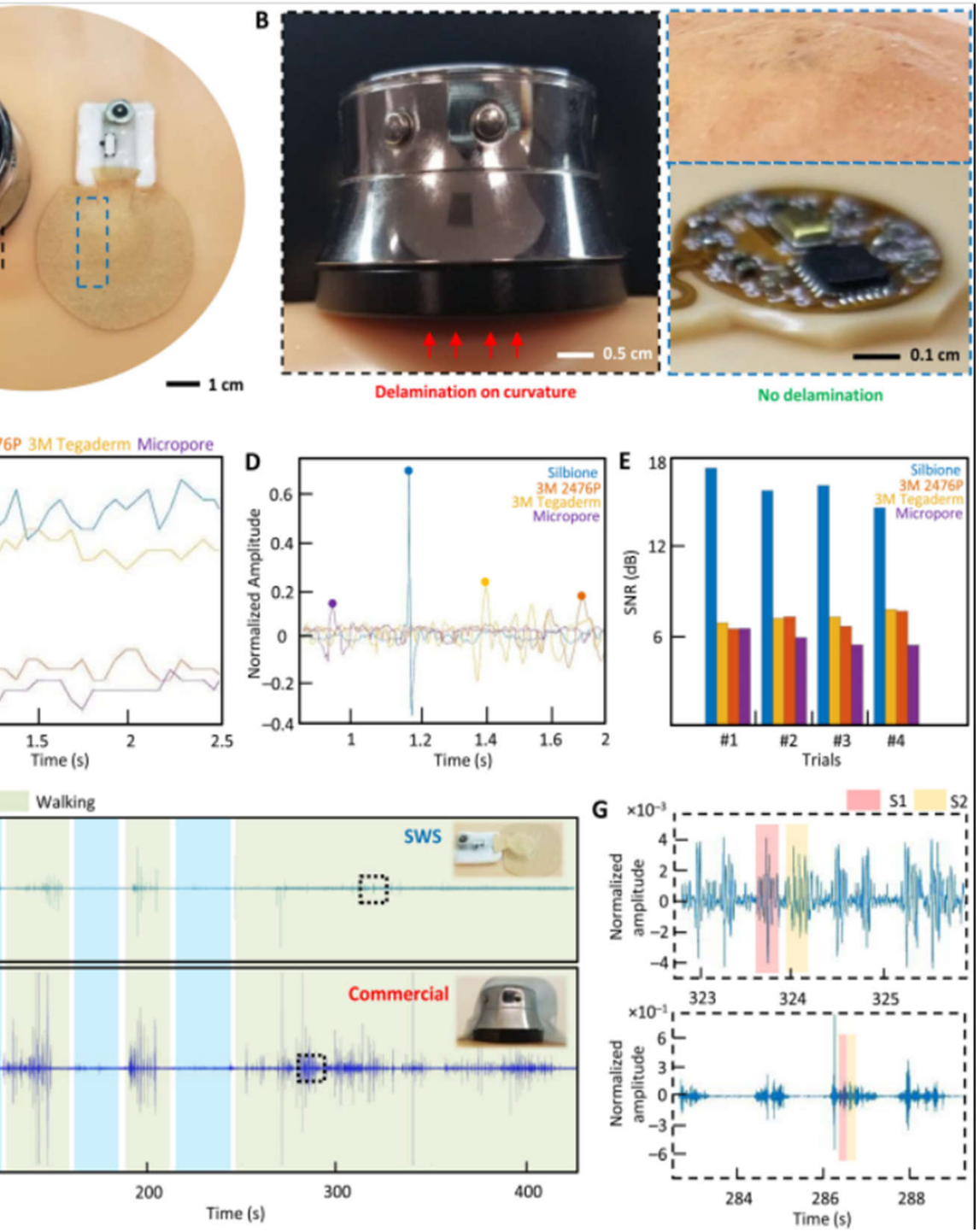
Design, architecture, and mechanical proper an SWS. (A) Schematic illustration of remot monitoring using the SWS, with the zoomed photo of the device on the finger and the ch (bottom). Mobile device showing real-time g of cardiac and pulmonary auscultation data days (right) while doing daily activities witho contact (bottom right). (B) Exploded view of SWS with multiple layers of deposited mate (C) Image of the 20% stretched interconnec the SWS. (D) Finite element analysis (FEA) r in (C). (E) Photo of the SWS with 180° bendi FEA results showing cyclic bending from (E) Schematic illustration of the flow for autom objective diagnosis of diseases via machine learning in the SWS. Various real-time colle abnormal sounds go through preprocessing machine learning, and classified results stre through the application installed in any mob device.

al stethoscopes provide better results compared to
ventional methods to record and visualize modern
cultation. Current stethoscopes are bulky, non-conformal, an
suited for remote use, while motion artifacts can lead to
curate diagnosis. In a new report now published in *Science*
ances, Sung Hoon Lee and a research team in engineering,
otechnology, and medicine at the Georgia Institute of
nology, U.S., and the Chungnam National University Hospita
e Republic of Korea described a class of methods to offer
time, wireless, continuous auscultation. The devices are par
soft wearable system for quantitative disease diagnosis
ss various pathologies. Using the soft device, Lee et al
cted continuous cardiopulmonary sounds with minimal
e to characterize signal abnormalities in real-time. The team
ducted a clinical study with multiple patients and control
ects to understand the unique advantage of the wearable
cultation method, with integrated machine learning, to
mate diagnoses of four types of disease in the lung, ranging
a crackle, to a wheeze, stridor and rhonchi, with 95%
racy. The soft system is applicable for a sleep study to
ct disordered breathing and to detect sleep apnea.

cultation in the field of medicine

nic obstructive pulmonary disease (COPD) and cardiovascular disease (CVD) predominant factors of mortality worldwide. The two pathologies form an rella term for diseases of the heart and lung, leading to the malfunction and icted blood flow during breathing. While approximately 80% of COPD mortality rs in low-to-middle income countries due to healthcare inaccessibility, accurat cultation can be helpful diagnose disease at an early stage and evaluate the ment response. Similarly, heart sounds also facilitate diagnosis and the tification of vascular heart diseases.

cultation is the most basic and vital diagnostic method in medicine, due to its nvasive, fast, informative and inexpensive use. Since most stethoscopes cann rd the detected sounds, the process can be limited via conventional noscopes, making it difficult to share the outcomes to record abnormalities. As lt, some of the critical respiratory and heart diseases can be misdiagnosed or erdiagnosed. Digital stethoscopes that assist auscultation in real-time can rt acoustic sounds to electrical signals to amplify inaudible sounds via acoust noscopes. In this work, Lee et al introduced a soft wearable stethoscope syste mbulatory cardiomyopathy auscultation via a class of methods based on nced electronics, flexible mechanics, and soft packaging for cardiovascular ase, and respiratory monitoring.

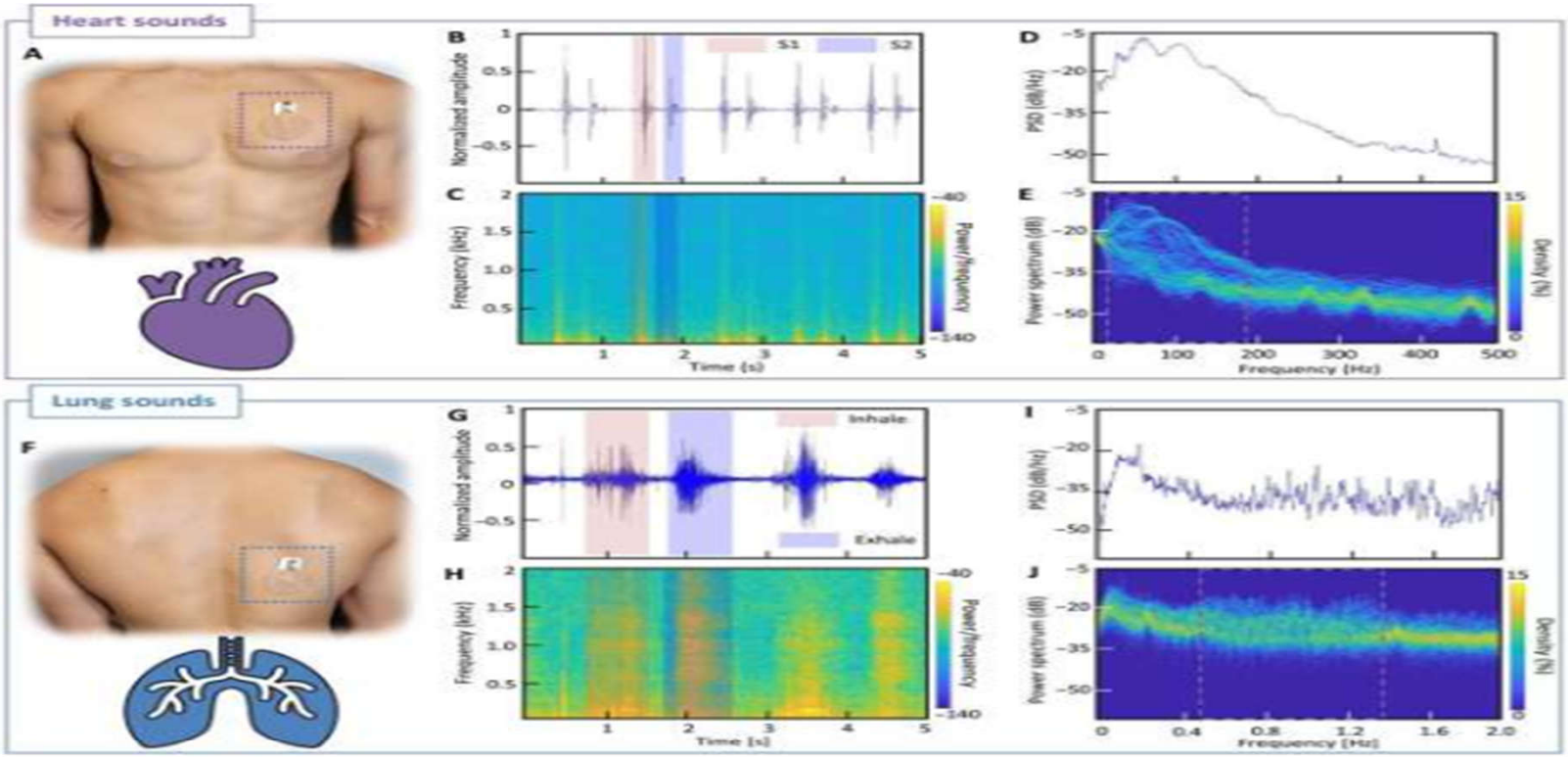


Mechanics, optimization, and control of mo
artifacts with an SWS. (A) Photo comparing
with a commercial device (TLO digital steth
on the skin model. (B) Comparison of skin c
quality between the commercial rigid stetho
(left) showing delamination from the skin d
45° curvature and the SWS showing intimat
contact. (C) Difference of pressure applied
microphone island using various biocompa
adhesives, including silbione, 3M 2476P, 3M
Tegaderm, and micropore. (D) Time-series
versus normalized amplitude for the S1 pea
the heart sounds using different adhesives.
Calculated SNR from S1 peaks from (D); the
four trials. (F) Time-series graph of the SWS
the commercial device (TLO) when both are
mounted on the chest; this subject conduct
different activities, including standing and w
while recording the sounds. (G) Zoomed-in
for part of the noise peaks caused by walki
SWS with skin-conformable contact (top gr
clearly shows S1 and S2 peaks, while the
commercial one (bottom graph) shows step
amplified compared to the heart sounds.

ce design of a soft wearable stethoscope (SWS)

eam collected the cardiorespiratory data accurately during daily activities to
ose pulmonary abnormalities. They then improved the signal-to-noise ratio
the wavelet-denoised sound collection, to minimize circuitry and made the
e more compact to train a machine learning model to accurately identify stridor,
chi, wheezing, and crackling lung sounds. Lee et al also developed a user-
dly mobile device application to record heart and lung sounds, and uploaded the
mation remotely and securely. They formed the miniaturized, soft wearable
m for remote patient cardio-pulmonary auscultation with exceptionally small
nechanically flexible devices, for flexible skin integration, and self-assisted
ultation to facilitate remote continuous monitoring without patient-physician
cal interactions. The elastomeric enclosure maintained an inner silicone gel to
t skin contact, and included a thin, conductive hydrogel-coupled layer to
ultate cardiac and respiratory activities. The setup included multiple layers of
materials and electronic components, including a microphone sensor,
rgeable battery, and thin-film circuits with a blue-tooth low-energy unit for
ess data transmission. The system maintained a microelectronic mechanical
m microphone for sound recording, allowing the team to convert the sound
cted from the microphone to digital signals via an analog-to-digital converter
mlined via the wireless chip for data processing. The fully portable stethoscope
ed a unique opportunity to remotely monitor the digital health.

ventional stethoscope vs. the digital stethoscope

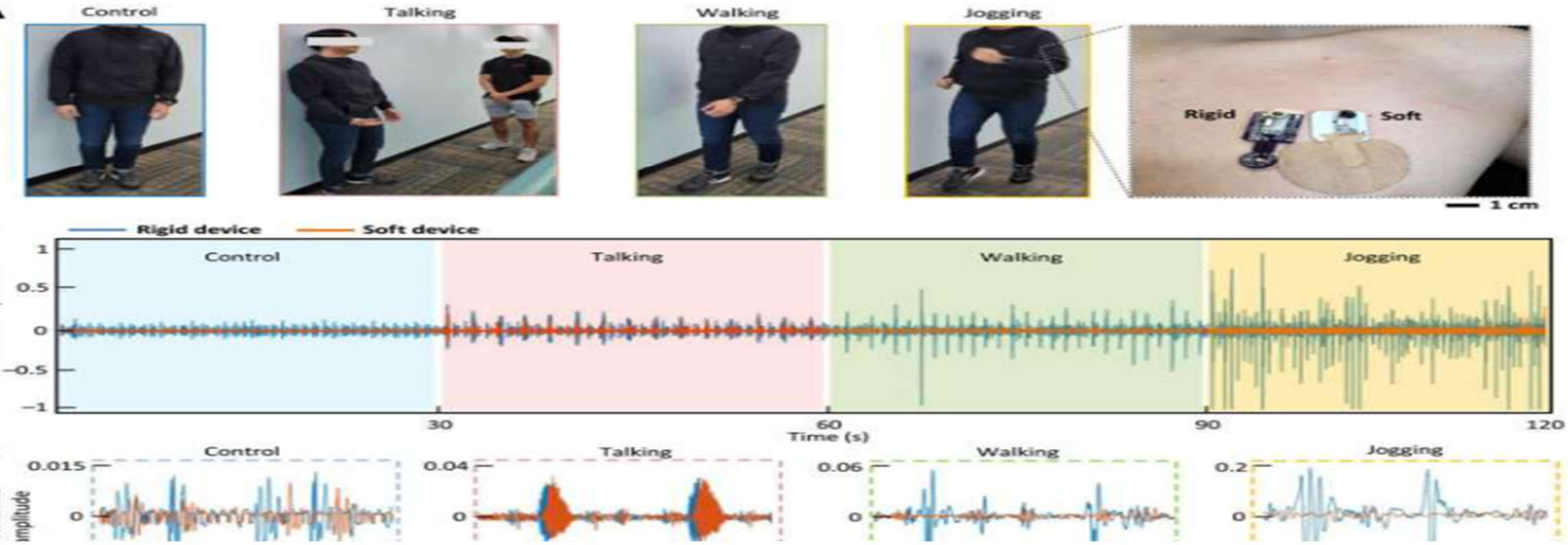


e performance in the monitoring of heart and lung sounds. (A) Photo of the SWS mo

eam sought to maintain appropriate contact of the wearable microphone
em to the skin. When compared to the commercial stethoscope, the thin and
ble digital stethoscope formed conformable contact for high-quality sound
rding. Lee et al conducted experiments to compare the sound recording
rmance between conventional vs. digital stethoscopes, in which healthy
ects walked or stood with the device mounted on the chest and recorded
ds every five minutes. The device further demonstrated water-proof capabili
breathability, for long-term use.

cting cardiac sounds in daily life and introducing a denoising algorithm for mated disease diagnosis

e daily activities have diverse sources of noise, and can negatively affect ding sounds with a conventional stethoscope, clinicians perform auscultations tients in a resting state. Lee et al demonstrated the performance of a digital oscope to regulate motion artifacts relative to the skin-contact quality by oring a range of scenarios in which subjects mimicked a variety of real-life tions to show the influence of the measured sound quality. While the soft e allowed efficient sound recording, conventional stethoscope-like devices ed low-quality recordings of the heart and lung sounds. The team used ional filtering of the first-level cut-off frequencies to remove unwanted high-ency noise.



portable, continuous monitoring of cardiac sounds in daily life. (A) Series of photos sho...

esearchers studied wavelet transformation of heart, lung sound signals a
filtering to capture sounds of the body and the surrounding. They
nplished this with a threshold algorithm to suppress noise in digital signa
ork showed superior performance of the soft wearable system by detect
ounds and abnormalities from various diseases. The new stethoscope
led a crucial advantage for continuous real-time recording of high-quality
ls, and quantitative data via convolutional neural network (CNN)-based
ine learning, for automated disease classification. The team converged t
phone app with machine learning to classify disease phenotypes in real-

ok

s way, Sung Hoon Lee and colleagues developed a flexible, soft material n
tion mechanism and associated algorithm to fully realize a portable,
nuous, real-time auscultation method with a wearable stethoscope. The t
ed cardiopulmonary monitoring across multiple humans engaged in vario
activities. The soft wearable system is biocompatible and skin friendly, w
ated deep learning, applicable for successful clinical studies and remote
se analyses, suited for next-generation personalized biometric security
ms.

CT-detected emphysema points to higher lung cancer risk

By Kate Madden Yee, AuntMinnie.com staff writer

r 3, 2022 -- Emphysema found on chest CT is associated with higher lung
cer risk -- especially if the emphysema is severe, according to a study published
r 3 in *Radiology*. Such findings could help indicate individuals suitable for CT
cancer screening.

findings could help physicians better identify patients at high risk for lung
cer, said study co-author Marleen Vonder, PhD, of the University of Groningen in
Netherlands in a statement released by the RSNA.

entially, emphysema detected on a baseline CT scan could be used to select
-risk participants who would require more frequent follow-up lung cancer
ening," she said.

g cancer is the main cause of cancer-related death around the world, and risk of
disease is evaluated using low-dose chest CT. Emphysema is also assessed
chest CT, and shares common risk factors with lung cancer, including smoking,
onic lung inflammation, and occupational exposure to air pollutants.

her underlying mechanisms like genetic susceptibility, chronic inflammation or
A damage and abnormal repair mechanisms, or a combination thereof, have
n proposed to link emphysema and lung cancer," Vonder said in the statement.

vious studies have produced mixed results regarding the link between
physema severity and lung cancer, and particularly between visual analysis
ormed by radiologists interpreting CT exams and quantitative assessment of CT
ges.

e current study, a team led by Dr. Xiaofei Yang, also of the University of ingen, explored the connection via a study that included data from 21 studie d in three databases (PubMed, Embase, Cochrane) that investigated the link een emphysema evaluated visually or quantitatively on chest CT and lung er; the studies included 107,000 patients, and researchers tracked emphyse rity and subtype.

study review found that overall pooled odds of developing lung cancer given ence of emphysema were 2.3 (with 1 being reference). These odds were sim oth visual (2.3) and quantitative (2.2) assessment of CT images.

f the 21 studies showed that the odds of a person being at higher risk for lun er increased with emphysema severity and were higher on visual assessmer T images than on quantitative assessment, the group found.

Odds for lung cancer based on emphysema severity and by type of assessment (reference = 1)

Emphysema severity	Quantitative assessment of CT images	Visual assessment of CT images
Trace	1.9	2.5
Mild	2.2	3.7
Moderate to severe	2.5	4.5

hysema diagnosed at chest CT was independently associated with a higher of developing lung cancer, regardless of whether it was assessed visually o titatively," the team wrote.

mphysema diagnosed at chest CT was independently associated with a higher
lds of developing lung cancer, regardless of whether it was assessed visually or
antitatively," the team wrote.

he study could have interesting effects on lung cancer screening, according to an
companying commentary written by Dr. Andetta Hunsaker of Brigham and
omen's Hospital in Boston.

he implications of the current study by Yan et al are valuable for patient care," sh
ote. "It may be that lung cancer screening as we know it will need to undergo
me modification to include emphysema as one of the category descriptors, whic
ll contribute to the Lung CT Screening Reporting and Data System score and
low-up screening intervals."

omen with silicone breast implants getting follow-up MRI?

Madden Yee, AuntMinnie.com staff writer

ne 6, 2022 -- Few women with silicone breast implants comply with the U.S. F
d Drug Administration's (FDA) recommendation that they be tracked for
ymptomatic rupture with breast MRI, a study published June 3 in *Plastic and
constructive Surgery* has found.

y? It may be that women with silicone implants don't know about the FDA
deline, or they may not see it as necessary, reported a team led by Dr. Libby
peland-Halperin of Dartmouth-Hitchcock Medical Center in Lebanon, NH.

he] majority of patients in our study were unaware of [the FDA recommendatio
d generally underwent imaging for cancer-related reasons rather than implant
ncerns," the group wrote. "Furthermore, those who were aware of the
ommendation elected not to undergo screening due to having no implant
ncerns or aversion to MRI testing."

cone breast implants were introduced in the 1960s. Rupture is one of the mos
mmon reasons for removing them -- with some estimates putting rupture
idence as high as 30% at five years, 50% at 10 years, and 70% at 17 years.
cone leakage is a serious concern because it can have systemic effects,
peland-Halperin and colleagues noted.

mmography can identify ruptures in which silicone has migrated out of the
plant (extracapsular), but it may miss those in which the silicone has ruptured
osule of tissue the body has formed around the implant (intracapsular), the
hors wrote. Additionally, although breast implant ruptures may manifest as bre
ymmetry or pain, they can also be asymptomatic, which makes breast MRI a
re effective way to assess for implant ruptures. In 2006, the FDA recommende
t women with silicone implants undergo breast MRI beginning three years
stsurgery and every two years after that.

are women complying with this guideline? To address this question, the estigators conducted a telephone survey study that included 109 women 18 rs and older with silicone implants that had been placed between 2011 and 6. The survey assessed the women's awareness of FDA recommendations, ether they had undergone breast MRI for screening for asymptomatic implant ture, and if there were any barriers to doing so. Most of the women (79%) had lants placed for reconstruction purposes, and most (30%) were covered by dicare or Medicaid.

of the women who participated in the survey, only 5.9% were aware of and npliant with the FDA's breast MRI follow-up recommendation; 92 were "unaware he FDA recommendation, despite this having been discussed during operative clinic visits and summarized in supplemental information pamphlets," group reported.

Rates of imaging surveillance for silicone implants

Measure	Compliance rate
Any other imaging performed since implant surgery	48.6%
Mammography performed since implant surgery	31.2%
Ultrasound performed since implant surgery	17.4%
MRI performed at all since implants placed	15.6%
MRI performed within FDA guideline	5.9%

researchers found no statistically significant difference in women's adherence en it came to cosmetic versus reconstructive surgery, having health insurance, or ing higher income.

e researchers found no statistically significant difference in women's adherence en it came to cosmetic versus reconstructive surgery, having health insurance, or ving higher income.

ck of compliance with the FDA's suggestion regarding tracking silicone breast plant rupture with breast MRI may have to do with patient discomfort about the am or insurance coverage, the team noted.

ven patients who were aware of the recommendation elected not to undergo eening MRI because they 'didn't like MRIs' or did not believe it necessary cause 'everything has been fine' in follow-up," Copeland-Halperin and colleagues ote. "Unfortunately, because routine, asymptomatic follow-up visits several years stoperatively may not be covered by insurance policies and cosmetic cedures/follow-up are not covered by insurance, many patients may not return follow-up around the time MRI would be due."

e low adherence rate needs further study in order to better understand women's uctance, according to the authors.

ldditional research is needed to better characterize adherence to MRI surveillance ommendations, identify barriers to implementation, and determine whether [the A's] recommendation remains valid," they concluded.

how good is digital breast tomosynthesis, anyway?

e Madden Yee, AuntMinnie.com staff writer

16, 2022 -- It's been more than 10 years since the U.S. Food and Drug
nistration (FDA) cleared digital breast tomosynthesis (DBT) for marketing
DBT delivered on its much-anticipated promise? Experts weighed in on M
e Society for Breast Imaging annual meeting in Savannah, GA.

DBT offers some benefit over digital mammography (DM) alone, said pre
ebra Monticciolo of Texas A&M University in Temple. But these benefits a
fic to particular populations and care settings.

ation of application settings affects [DBT] outcomes," she told session
dees. "Prevalence versus incidence, biennial versus annual screening, h
s low recall rates, the age of patients, and breast density."

icciolo offered an overview of DBT's performance, then addressed hotly
ted topics such as whether synthesized mammography (SM) images can
ce digital mammography ones in tomosynthesis imaging and whether the
val cancer rate for DBT is an effective way to measure mortality rates.

s eye view

does digital mammography alone compare with digital mammography plus - which requires two radiation exposures? Paired studies have shown that DM BT does find more cancers: 8.8 per 1,000 women compared with 6.4 per . But in unpaired studies, the difference is narrower, at 5.7 cancers detected 000 women compared with 4.5, Monticciolo noted.

about recall rates? The DM/DBT combination has a higher overall recall rate red studies compared with digital mammography alone: 4.1% versus 3.5%. unpaired studies, the DM/DBT combination produces fewer recalls compared igital mammography alone: 8% versus 11.3%.

hat's the takeaway? The benefit of DM/DBT compared to digital mammography nds on the setting.

cancer detection rate improves most in the biennial screening setting, but is le and lower in annual screening," Monticciolo said. "The recall rate improves recall is highest, but is often still high, and there's no improvement seen in design studies."

w effective are synthetic mammography images?

012, the FDA cleared the way for synthetic mammography images to be used
ce of digital ones with DBT -- an action that appears to be good for women, sin
-view DBT radiation doses are 23% to 38% higher than digital mammography,
using synthesized imaging saves an acquisition and thus a radiation dose.

are synthesized images an effective alternative to digital mammography
ges? Clinical results testing the efficacy of synthesized mammography images
DBT have been mixed. The Norwegian randomized Digital Breast
nosynthesis Trial in Bergen (TOBE) compared SM/DBT to DM alone, and it fou
across a variety of measures, only SM/DBT's recall rate and positive biopsies
alled patients (PPV1) showed better performance compared with DM alone.

omparison of digital mammography alone to SM/DBT (TOBE trial)

Measure	Digital mammography alone	SM/DBT	p-value
ecall rate	4%	3.1%	< 0.0001
PV1	15.2%	21.4%	0.011

other study, the Screening with Tomosynthesis Or standard Mammography-2
ORM-2) trial, compared digital mammography to DM/DBT to SM/DBT and fou
the cancer detection rate was higher with either tomosynthesis technique
sus digital alone, but the study results indicated that the two techniques were
entially equivalent, Monticciolo said.

ncer detection rate per 1,000 women by breast imaging techniq (TOBE trial data)

Measure	Digital mammography (reference)	SM/DBT	DM/DBT
erall	6.3	8.8 (p-value, < 0.0001)	8.5 (p-value 0.0001)
omen < 60	3.7	7 (p-value, < 0.0001)	6.3 (p-value 0.0001)
omen 60 and der	10.2	11.4 (p-value, 0.23)	11.7 (p-valu 0.031)

DBT outcomes are equivalent to DM/DBT -- although SM is an inferior ima DM has better resolution," Monticciolo said. "There's support for using eithe

s DBT reduce mortality?

s tomosynthesis lead to a mortality benefit? A survey of eight studies condu een 2016 and 2021 that explored whether DBT cut interval cancer rates pared with digital mammography alone found no statistically significant ction, Monticciolo noted.

does not change interval cancer rates," she said. "[But] interval cancer is event, and all studies are underpowered to see interval cancer rate change

cade into its use, DBT's benefits may be more moderate than clinicians nally hoped, Monticciolo concluded.

en it comes down to it, we all thought initially DBT would knock our socks o he technology] is a closer cousin to digital mammography than we expecte said.

nodel diagnoses osteoporosis on hip x-rays

ill Morton, AuntMinnie.com staff writer

27, 2022 -- An artificial intelligence (AI) model based on features seen in h
could help clinicians diagnose osteoporosis. Researchers from South Kore
ained their study in a paper published May 25 in *Radiology: Artificial*
igence.

access to dual-energy x-ray absorptiometry (DEXA) for osteoporosis scree
r limited or unavailable in many regions in the world, the authors suggest t
could serve as a second reader to identify patients at risk for the disease.

model can serve as a triage tool recommending DEXA in patients with hig
ected osteoporosis," said radiologist Dr. Hee-Dong Chae of Seoul National
ersity Hospital (SNUH), in a news release from RSNA.

A exams of bone mineral density are used globally as a reference for
nosing osteoporosis. Yet its use for screening in regions with developing
omies is limited due to the low availability of scanners and relatively high c
in developed countries, many patients are left at risk for fracture without
rgoing osteoporosis screening due to a lack of understanding among
hcare providers, according to the authors.

paratively, plain x-ray is "an almost ubiquitous imaging modality," the autho
e.

nt studies have shown the potential of deep learning as a promising tool fo
porosis diagnosis, but most previous studies have been performed using
r texture or deep-learning features alone, and studies using both features
taneously are scarce, the authors wrote.

s study, the researchers aimed to develop a "deep-radiomics" model that
ined radiomics features, texture features, and clinical features of hip x-rays
alidate it for diagnosing osteoporosis.

esearchers began with data on 54,687 consecutive adult patients with hip
c anteroposterior x-rays acquired between January 2008 and April 2020 at
H. Among these records, they selected 8,686 patients with suspected
porosis who underwent DEXA exams.

exclusions, they included 4,308 patients with 4,924 x-rays. Among these, 4
ed normal bone mineral density, 46% indicated osteopenia, and 13% show
porosis.

this dataset, the group extracted 20 deep-learning radiomics features, 32
region texture features, and three clinical features (age, sex, and weight) t
and test the model, named Model-DTC.

RSNA

Deep Radiomics-based Approach to the Diagnosis of Osteoporosis Using Hip Radiographs

Key Result
The deep-radiomics model had higher diagnostic performance for osteoporosis on hip radiographs than models using only clinical and texture features.

Patients:

Training, Validation, Internal Sets
- 4308 with DXA

External test set
- 444 with DXA

Methods:

- A deep-radiomics model was developed using 20 deep features, 32 texture features, and 3 clinical features.
- 7 models were created by combining different feature types.

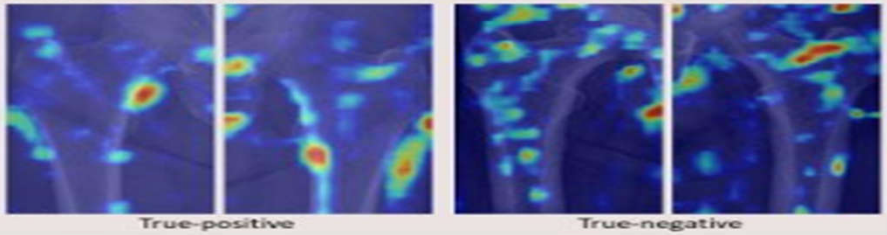
Results:

- The model with deep, clinical, and texture features (Model DTC) showed the highest diagnostic performance with an external test set compared with other models and observers.

Results:

	AUC
Model DTC	0.95
Average observers (without aid of model)	0.77
Average observers (with aid of model)	0.87

Grad-CAM Maps



True-positive True-negative

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https://doi.org/10.1148/ryai.210212

Radiology: Artificial Intelligence

xt, six readers (two fourth-year radiology residents, two musculoskeletal iology fellows, and two staff radiologists with 10 and seven years of experience) iewed an external set of 444 hip x-rays over two sessions. In the first session, ch observer reviewed the x-rays without the help of the deep-radiomics model, d in the second session, they evaluated the image while referring to the edictions of Model-DTC.

cording to results, the stand-alone prediction by Model-DTC (AUC, 0.95) monstrated higher performance diagnosing osteoporosis than predictions by servers with or without aid of the deep-radiomics model.

reover, with regard to the added value of Model-DTC as a second reader, the earchers found the diagnostic performance of all six observers significantly proved in the second session (average AUC, 0.87) over the first session (averag C, 0.77).

addition, the average sensitivity and specificity for the readers in the first session re 88% and 49%, which improved to 89% and 66% in the second session, the earchers found.

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h regard to the added value of the deep-radiomics model (Model-DTC) as a
ond reader, the diagnostic performance of all six observers was significantly
oved in the second interpretation session," the authors wrote.

group noted several limitations, namely that the study was retrospective and
have been affected by selection bias and that the model was not based on
ession methods that continuously reflect bone mineral density. Thus, its use fo
tment monitoring would be limited, they wrote.

etheless, the bottom line is that the study showed a deep-radiomics model can
sed to help diagnose osteoporosis on hip radiographs with high diagnostic
ormance, Chae and colleagues wrote.

re studies are planned to evaluate the performance of deep-learning
oaches for predicting fracture risks on x-rays in patients with osteoporosis, as
as validating the model in various ethnic populations other than Asians with a
e range of body weights, the authors concluded.

lligence (AI) Can Diagnose Osteoporosis from Hip X-Rays

ternational staff writers
2022

e with osteoporosis, a skeletal disease that thins and weakens bon
ptible to fracture associated with bone fragility, resulting in poor qu
d increased mortality. Early screening for osteoporosis with dual-ene
sorptiometry (DXA) to assess bone mineral density is an important t
treatment that can reduce the risk of fractures. However, the low avai
scanners and the relatively high cost has limited its use for screeni
eatment follow-up. In contrast, plain X-ray is widely available and i
ntly for various clinical indications in daily practice. Despite these attr
been relatively underutilized in the management of osteoporosis be
sing osteoporosis using only X-rays is challenging even for an exper
gist. Now, a new method that combines imaging information with a
ence (AI) can diagnose osteoporosis from hip X-rays and could help
ent to patients before fractures occur.

rchers at Seoul National University Hospital (Seoul, Korea) have devel
that can automatically diagnose osteoporosis from hip X-rays. The n
nes radiomics, a series of image processing and analysis methods to
ation from the image, with deep learning, an advanced type of AI
g can be trained to find patterns in images associated with di

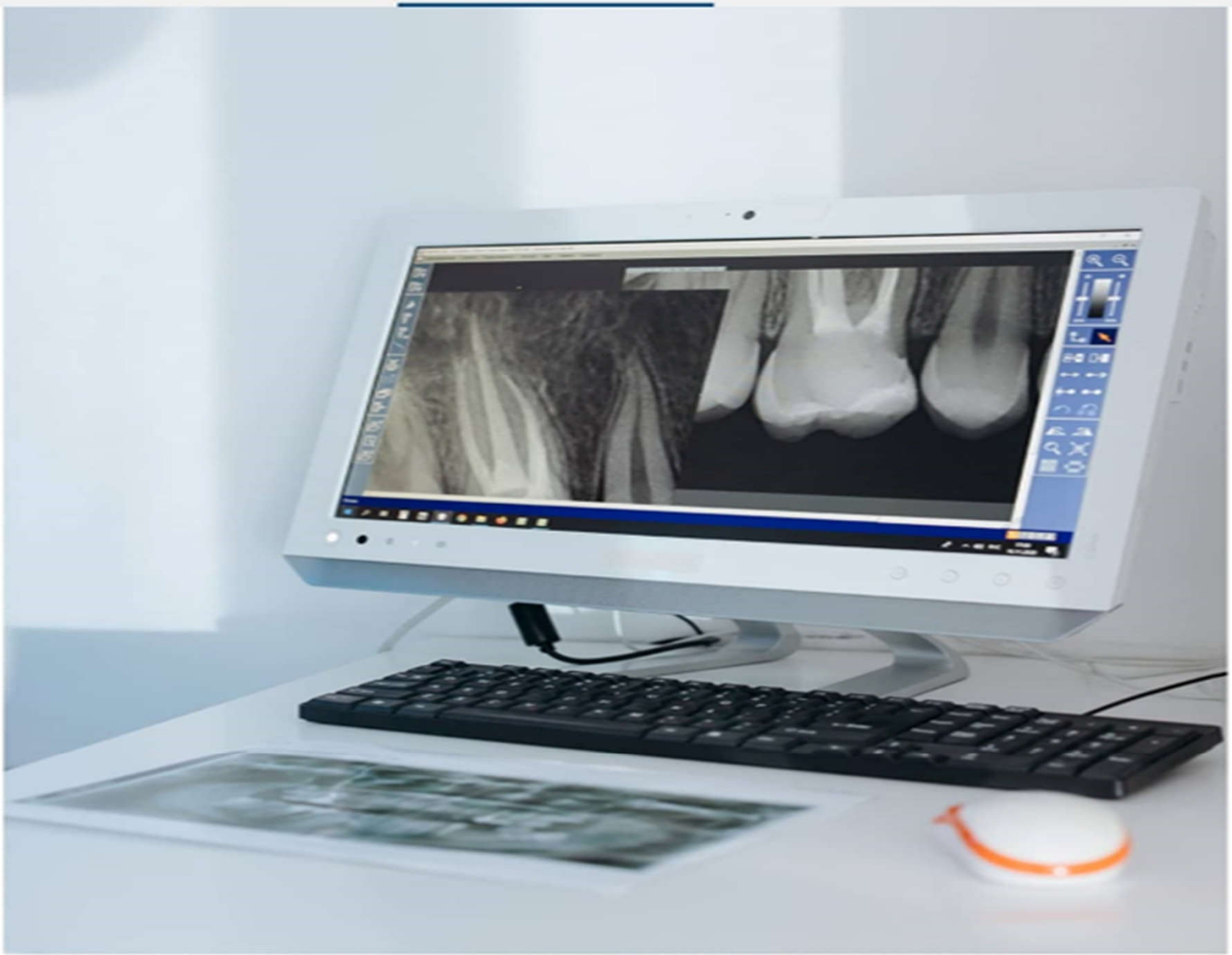

Image: An AI model can automatically diagnose osteoporosis from hip X-rays (Photo courtesy of Pexels)

researchers developed the deep-radiomics model using almost 5,0
ys from 4,308 patients obtained over more than 10 years. They dev
models with a variety of deep, clinical and texture features and then
m externally on 444 hip X-rays from another institution. The deep-rad
del with deep, clinical, and texture features was able to dia
eoporosis on hip X-rays with superior diagnostic performance tha
dels using either texture or deep features alone, enabling opport
gnosis of osteoporosis.

patients with hip pain, radiologists often evaluate only image findin
cause pain, such as fractures, osteonecrosis and osteoarthritis
dy author Hee-Dong Chae, M.D., from the Department of Radiology at
ional University Hospital. “Although X-ray images contain more infor
ut the healthiness of the patient’s bones and muscles, this informa
n overlooked or considered less important.”

r study shows that opportunistic detection of osteoporosis using th
images is advantageous, and our model can serve as a triag
ommending DXA in patients with highly suspected osteoporosis,” Dr
ed.

THE END