



## Aviation Human Factors Industry News January 22, 2008

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### 'Hero' pilot hailed as Heathrow crash landing probe opens

The pilot of a British Airways jet that crash landed at London's Heathrow airport with more than 150 people on board was **hailed as a hero** Friday as investigators began their probe into the incident.



All 136 passengers and 16 crew on the Boeing 777 from Beijing **escaped without serious injury** when the aircraft was forced to land short of the runway Thursday after apparently losing power during its final approach.

"Give him a **medal** as big as a frying pan," was the Daily Mirror tabloid's headline verdict on pilot Captain Peter Burkill's efforts in **guiding the stricken jet to safety.**

Prime Minister Gordon Brown, whose party was at Heathrow and witnessed the aftermath of the crash ahead of an official visit to China, was also effusive in his praise.

"I think it is right to pay tribute to the **calmness and professionalism** of the British Airways staff and the captain and what he achieved in landing the aircraft," Brown said after arriving in Beijing.

"It's at times like these you remember you are in the hands of staff who do a remarkable job," he added.

A total of 18 people received treatment for minor injuries following the crash at 12:42 pm.

## Pilots Deceived by Faulty Fuel Gauge

### Fairchild Metro ILL. No Damage. No Injuries

The aircraft was at FL 170 en route from Thangool, Australia, to Brisbane with 16 passengers the evening of Sept. 23, 2005, when a warning light illuminated, indicating that the left fuel transfer pump was not operating and that less than 70 LB of fuel remained in the left wing tank. The flight crew "initially thought that the warning may have been false, as the fuel quantity indicator showed that there was substantial fuel in the left tanks," the ATSB report said. "In accordance with the checklist, they selected the alternate boost pump, but the caution light remained on."



The crew diverted the flight to Bundaberg, which was 55 nm away and 42 nm closer than Brisbane. The left engine flamed out about 10 nm from the Bundaberg airport, and the crew conducted a single-engine approach and landed with further incident.

When the Metro was examined the next day, the fuel quantity indicator showed 400 LB of fuel in the left tanks and 250 LB in the right tanks. "Four pounds of fuel was subsequently drained from the left tanks, indicating that the left engine stopped because of fuel exhaustion," the report said. "There were 49 pounds of fuel in the right tanks, sufficient for about 10 minutes of flight".

Investigations found that the fuel quantity indicating system has not been calibrated properly during maintenance performed before the incident flight.

"The crew relied on the fuel quantity indicator to determine the quantity of the fuel on the aircraft before the flight," the report said. "That practice was common to most of the operator's crews. The fuel quantity management procedures and practices within the company did not ensure validation of the aircraft's fuel quantity indicator readings. There was also no system in place to track the aircraft's fuel status during and after maintenance."

## A380 rolls off runway in Singapore

The double-decker A380 superjumbo has suffered its **first mishap in service** after a **malfunctioning tug** caused it to roll on to grass next to the runway.

The glitch prompted Singapore Airlines to cancel the aircraft's nightly flight to Sydney last Thursday and transfer its 466 passengers to a Boeing 747 and other flights to Australia.



An **hydraulic failure in the tug** caused it to disconnect from the aircraft and the A380 rolled on to the grass verge. The aircraft was not under its own power at the time.

The incident caused superficial damage to tires and wheels and meant that the heavy aircraft had to be stabilized and towed back on the tarmac.

The mishap comes as Airbus delivered Singapore's second A380 in Toulouse, France. Sydney is the first destination in the world for the giant plane and Qantas is expecting to get delivery of its first aircraft in August.

Dubai carrier Emirates, meanwhile, has announced that showers will be available to refresh first-class passengers on its Airbus A380 aircraft later this year.

Emirates plans to **carry one ton of fresh water** on its superjumbos.

"The water certainly won't be recycled," said Richard Vaughan, the carrier's senior vice-president, commercial operations, East Asia and Australasia. He said the showers would be cleaned after every use.

Emirates, which has spent \$96.3 billion on new aircraft since 2001, has **ordered 58 A380s** – the biggest purchase by any airline of the superjumbo.

Emirates will receive its first A380 in August and Australia will be among the first countries to be served by Emirates' A380s

## Police prepare case against Garuda pilot

JAKARTA: Police are preparing their case against pilot Marwoto Komar, who is widely viewed as **being responsible** for the crash of a Garuda Indonesia airplane in Yogyakarta last year, a senior police officer said Saturday.



"Our investigation team has returned from Australia with their results," National Police chief of detectives Comr. Gen. Bambang Hendarso Danuri told detik.com.

"The hearing in mid January will be based on the results of an investigation conducted by the National Transportation Safety Committee (KNKT)," Bambang said.

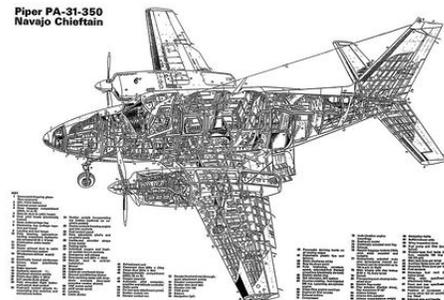
The Boeing 737-400 airplane, which was piloted by Capt. Marwoto Komar and Gagam Rachman, **crashed while attempting to land** in March last year, killing 21 people, including five Australians.

The KNKT previously said the accident was due to **human error**.

Captain Marwoto **reportedly ignored 15 warnings** to abort the landing at Yogyakarta Airport. The airplane was traveling at almost twice the normal speed at the time it crashed.

## [NTSB Says PA-31 Baggage Compartment Door At Fault In Other Accidents](#)

Survivor of January 5, 2008 crash In Alaska Says Door Opened On Takeoff Investigators with the National Transportation Safety Board are taking a close look at a **baggage compartment door** on the Piper PA-31 Navajo Chieftain that crashed shortly after takeoff in Alaska this weekend, killing six people onboard and injuring four.



One of the surviving passengers told officials the plane's **nose compartment door** opened shortly before the accident.

A **similar problem** contributed to two other Navajo crashed in Alaska, NTSB investigator Clint Johnson told the Anchorage Daily News.

"There have been **some incidents and accidents** that did result from the **door coming open**," he said. "We don't know yet if there are similarities." Johnson cautioned against jumping to conclusions, saying a number of possible factors are being looked into.



As ANN reported, the nine-passenger piston twin went down Saturday afternoon near Kodiak. The Servant Air plane has been chartered by a group heading to Homer, to celebrate the Russian Orthodox Christmas on Monday.

The plane's fuselage has been recovered, and was to be inspected last Tuesday by personnel with NTSB and an investigator from Piper.

According to online NTSB statistics cited by the Daily News, at least two Navajo accidents in Alaska involved **nose compartment doors** coming open. In an April 1990 incident, the door popped loose on takeoff from Deadhorse... apparently leading to a domino effect, as the door struck an engine cowling and then the horizontal stabilizer.

That plane was able to **make a safe emergency landing**. Investigators determined the **latching spring on the door was missing, and the latch been illegally modified to keep the door secured**.

Another incident in May 1996 also involved the **nose door** on the Navajo. That aircraft, departing Point Hope, had the compartment door fly open as the nose lifted on takeoff. "Baggage and boxes exited the nose baggage compartment and **fell through the left engine's propeller**," the NTSB's Probable Cause report states.

The pilot, unable to make it back to Point Hope, force-landed on the frozen sea.

"Just prior to touching down, the airplane started a slow, uncontrolled roll to the left," the report says. Of the six people onboard that aircraft, two persons were seriously injured, while two suffered minor injuries. Investigators determined the pilot **failed to properly insure the door was closed and locked**.

The rugged Navajo is considered one of the workhorses of the Alaskan general aviation fleet, and is a popular choice for charter operators nationwide. Servant Air spokesman Ted Panamarioff notes his company owned the plane since 2004, and never had a problem with it... **adding he feels something else contributed to the accident**.

"You've got all kinds of **Monday morning quarterbacks**, but there's nobody that could ever convince me [**the nose door coming open**] could be true in and of itself," he said. "The potential for a plane to take off with the door open -- it's not going to happen. [The pilot] **would have seen** it; it was right in front of his face."

## Focus on training brings steep dive in pilot error

Better training and improved technology have resulted in a 40per cent drop in the number of airline incidents involving pilot error.

The encouraging statistic emerged yesterday in a study of 558 **airline mishaps** between 1983 and 2002 by the US-based John Hopkins Bloomberg School of Public Health.

The findings, published in next month's edition of Aviation, Space and Environmental Medicine, also show that the rate of accidents involving pilots' **poor decision**-making fell by 71per cent.



"A 40 per cent decline in pilot **error-related mishaps** is very impressive," said lead author Susan Baker. "Pilot **error** has long been considered the most prominent contributor to aviation crashes."

Airline accidents tend to result from a **chain of events** rather than a single cause, but pilot **error** is seen as a **contributing factor** in about two-thirds of all crashes.

Recent high-profile crashes where pilot **error** has been blamed as a factor include the March crash of a **Garuda Indonesia plane** in Yogyakarta, killing five Australians, and September's crash in the Thai resort town of Phuket involving low-cost carrier **One Two Go**.

Airlines, safety authorities and professional pilot organizations have worked hard in the past 20 years to **improve training** in critical areas, such as coping with planes in unusual attitudes and **better communication** on the flight deck.

The US study finds that **mishaps** due to bad weather -- the **most common decision-making error** -- fell 76 per cent, while those involving wind or runway conditions fell 78 per cent.

**Mishaps** caused by **poor crew interaction** fell 68 per cent and those during take-off dropped by 70 per cent. The study notes that pilots are most likely to make a **mistake** during taxiing, take-off, final approach and landing.

While pilots are making **fewer errors**, the **study finds this is offset by increases in mishaps caused by other workers, such as air traffic controllers and ground crew.**

The researchers also call for improved safety during times when the aircraft is standing still or being pushed back from the gate, because **mishaps at these times doubled from a rate of 2.5 to six per 10 million flights.**

"Trends indicate that great progress has been made to improve the decision-making of pilots and co-ordination between the aircraft's crew members," Ms Baker said.

**"However, the improvements have not led to an overall decline in mishaps."**

## Stop the bulldozers

We have to disagree with The Times' **editorial** on LAX's many near-misses on the runway. It stated, "LAX's woes center on its dangerous and outdated configuration." Certainly, airport design and geometry are contributing causes of runway incursions, but LAX's problems are caused by many other factors, all of which are equally critical.



Based on our research and teaching on aviation safety and runway incursions for the last 20 years at USC, we have found that **human factors** are the most important contributor to runway incursions. In fact, according to the Federal Aviation Administration's Runway Safety **Blueprint 2002-2004**, **"human factors [are] the common denominator in every runway incursion."**

We would like to point out that the most notable causes of runway incursions include, in addition to airport geometry and design: **poor visibility** (due to fog, for example), ground and approach air traffic controllers' **communication practices**, air traffic controller **staffing**, workload and **cumulative fatigue**, deficient or **inoperative** ground radar systems, departure delay, **duty time limitation** and **pressure** on cockpit crews, cockpit crews' **inadequate situational awareness**, and **cultural** and **language differences** among interacting parties.

The Times also claimed that "LAX controllers aren't any more overworked than their peers elsewhere." But unlike most other airports, LAX controllers have had to handle the added effect of **continuous construction** on the southern runways. There are strong indications that air traffic controllers — not only at LAX but also nationwide — **are increasingly suffering from fatigue.**

This critical issue prompted the National Transportation Safety Board to update its "[most wanted list](#)" of safety improvements, adding, "three safety recommendations on air traffic controller [fatigue](#) to the existing aviation issue area that addresses [human fatigue](#)."

We agree with The Times that the situation is urgent, and there is no need to wait for the findings of another study — we know that the major [human factor](#) considerations in runway incursions are key. Rather than "sending in the bulldozers," the officials should [acknowledge these considerations](#) and develop a systematic plan of action.

## [Cessna Does Sales Job On Service Center Workers](#)

Cessna is mounting an airlift between Long Beach, Calif. and Phoenix this month trying to [convince workers and their families](#) to move with the company to Arizona. Cessna is moving its Long Beach business jet service center to Phoenix-Mesa Gateway Airport and, as you might expect, it's hoping the [80 mechanics](#) and support staff that run the existing operation will go along. Cessna needs to expand and Long Beach Airport is out of room so the move is necessary from a business standpoint but the company has apparently recognized that convincing the employees and their families to leave the gentle ocean breezes of Long Beach for blistering Phoenix (but it's a dry heat) will take more than just covering moving expenses.



"We want the children, the wives, everybody involved," Cessna exec Joel Davis (who lives in Wichita and might be able to remain objective) told the [Arizona Republic](#). ["This is a major change in their lives.](#) There is an ocean where they're living now, and we want it to be a family decision to come over here." For those not torn between the beach and a back yard made of sand and who just want to get their airplanes fixed, the Arizona move promises some advantages. The new Cessna facility will be double the size of the Long Beach center and will be able to keep pace with Cessna's record sales of bizjets. Cessna says that even if all the staff from Long Beach make the move they'll [still need more people](#) to meet the demand. The new service center is expected to be finished by the end of the year and by that time every one of the families affected will have spent three days in Phoenix getting acquainted with the amenities there with help from volunteers at the local chamber of commerce.

## Another High Consequence Industry Mishap

### Inexperienced navigator on watch of ship at time of grounding

JUNEAU, Alaska - The National Transportation Safety Board has released a preliminary report today into a cruise ship grounding 50 nautical miles southwest of Juneau.

The report says **The Empress of the North** was under the watch of an **inexperienced 22-year-old navigator fresh out of a maritime academy** during the May 14th accident.



The investigation remains open as the report offered no analysis or conclusions.

An NTSB spokesman says the investigation is expected to be done within six to eight months.

Investigators interviewed crew members and passengers shortly after the early morning accident that **forced 206 passengers to evacuate**.

One transcript details how a newly hired navigator **had no formal training** on the riverboat-style cruise ship or in the Alaska waters.

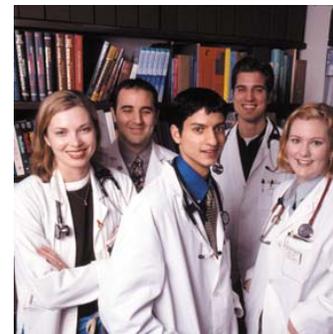
Seattle-based Majestic America Line owns the cruise ship. A spokeswoman says the company has no comment on the report.

## Med students learn how to prevent errors that can cost lives and money

MIAMI - The patient's on the operating room table. His upper body is punctured with stab wounds. He's kept alive via snaking tubes infiltrating the gashes.

The lights go out. Power failure. The ventilator, inoperable. The doctors, nurses and anesthesiologists are in the dark; a senior surgeon barks orders.

Thankfully, the victim is a "model patient." **A mannequin.**



This is the University of Miami /Jackson Memorial Hospital Center for Patient Safety, a program Dr. David Birnbach and his crew employ to teach medical students, residents, interns and health care staff how to react to emergencies,



**communicate more effectively** and most importantly, **reduce medical errors**, a critical area in the medical profession that can lead to costly **mistakes**, medical malpractice suits and patient deaths.

Launched on a \$950,000 state grant three years ago, the center offers a series of **mandatory courses** like the in-the-dark operating room scenario. Instructors simulate real-life situations - say, a mother showing up in the emergency room with a breached baby halfway through the birth canal and too late for a C-section - using medical equipment, mannequins, and the occasional actor to play a patient or harried orderly.

One of the key goals? **Communication**, says Birnbach, the program's director and the school's vice chair in the Department of Anesthesiology. It begins from the early days of medical school.

Once a staple of the TV sitcom, the **medical mistake** - operating on the **wrong body part**, prescribing the **wrong medication** - is a high-profile issue in the real world.

A recent case centered on a 3-year-old Gainesville, Fla., boy who was accidentally given a dose of a drug **10 times greater** than the doctor's prescribed amount. The child, Sebastian Ferrero, died Oct. 10 at a Shands HealthCare facility at the University of Florida. The **error occurred** even though the boy's mother **questioned the dose** as it was being administered.

**Medical errors** impact 1.5 million Americans each year, according to a 2006 Institute of Medicine study. That most recent report from the Washington-based research group also attached a bill for these **errors** - \$3.5 billion, assuming a conservative estimate of 400,000 of these events, which can include **mistakes** in procuring, prescribing and dispensing drugs. A serious **drug error** can add more than \$5,800 to the hospital bill for a single patient - and can lead to death.

"It's very serious, that's why the commission did the study," says Linda Cronenwett, who co-chaired the **Committee for Identifying Medical Errors** for the Institute.

**"The average patient in a hospital has about one medical error every day, which is a figure that resonates with people."** says David Bates, a Harvard Medical School professor who was on the Institute of Medicine's investigation committee. "Fortunately, most of these **errors** have little or no potential harm but with children, in particular, tenfold **errors** - giving 10 times a dose - are common because children come in such different sizes. Those **errors** can be especially risky."

The Institute of Medicine has called for a nationwide switch to electronic prescriptions rather than **handwritten, error-prone prescriptions**, and set a date of 2010 for all pharmacies to use e-prescriptions.

Already, many South Florida hospitals are on board or are converting to e-prescriptions, among them Miami Children's Hospital, Baptist Health South Florida, University of Miami/Jackson and the Memorial Healthcare System in Broward County. In September, Memorial launched its [LifeWings](#) program, an [aviation industry-based series of steps](#) designed to train personnel on safety practices and [teamwork](#).

Florida is also one of 30 states to have adopted the so-called “I'm sorry” laws, which can render comments that physicians make to patients after an [error](#) inadmissible as evidence for proving liability.

“The UM-JMH Center for Patient Safety has actually begun teaching physicians how to [honestly disclose errors](#) to patients by having them practice with simulated patients while they are videotaped,” Birnbach says.

## Bad Designs

### Labels that look like pushbuttons

One problem with these elevator controls is that the labels on the bottom row look like pushbuttons. So when you want to open the elevator door, you [accidentally](#) push the "DOOR OPEN" label instead of the pushbutton next to it. The top row of pushbuttons doesn't seem to have this problem.

### Design suggestion

One solution to this problem would be to put the labels on the pushbuttons, rather than beside the pushbuttons. However, this solution would probably be more expensive.

Another approach would be to determine why the top row of pushbuttons doesn't have the bottom row's problem and [apply that knowledge](#) to the design of the bottom row. The pushbuttons and labels in the top row are divided visually into groups, so it is easier to see the pattern of labels and pushbuttons. Also, the labels are narrower than the pushbuttons in the top row. This makes the labels look less like pushbuttons. Thus, making the labels narrower in the bottom row would not only put the label closer to its corresponding pushbutton, but also help divide the pushbuttons and labels into groups.



## Are you Driving Fatigued?



## Charlotte Paris

September 20, 1950 -  
September 23, 2007

*Char entered someone's life almost three years ago and developed a close and loving relationship that they both wanted to last the rest of our lives. She was full of life and love and had a heart of gold. Then heading home late at night after helping a friend with a catering assignment, a driver in the oncoming lane fell asleep and hit her head on, killing them both.*

## Midnight Shift Nugget

### **Eat light before sleep**

When you eat in the morning after work, stick to low-fat healthy foods before going to bed. A bowl of cereal or a small serving of pasta with chicken are good examples. This reduces your chances of having stomach problems while sleeping and also may help you maintain a healthier weigh because you burn less calories while asleep. If you're used to eating large breakfast after work, just remember that it doesn't take a lot of food to eliminate a seemingly huge appetite. What it requires instead is patience: From the time you start eating, it take about 20 minutes for the feelings of hunger to go away.

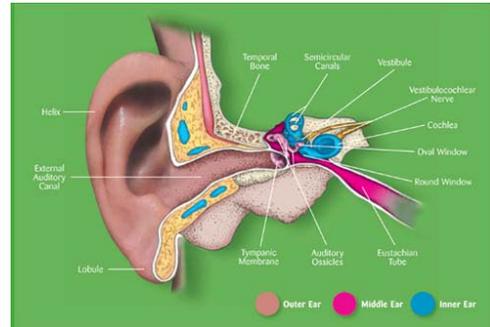


## Hear Ye! Hear Ye!

Remember the saying, "You don't know what you've got 'til it's gone?" This is really the case with your **hearing**.

Exposure to loud noise and **failure to wear hearing protection** can make you lose your hearing before you know it.

This loss occurs **so gradually**, you may not realize it's happening. You may not be aware until it's too late.



Physiologically, loud noise severely damages the inner ear. The damaging potential of noise depends on the length of exposure and the sound pressure level.

### **Hearing loss is irreversible.**

When sounds start to seem muffled, or you experience ringing in your ears (and there are no bells!) it could mean that hearing loss is starting to set in.

One way to tell how much hearing you've lost is to be tested by a professional with an audiometer. Wearing headphones, you identify tones of different loudness and pitch to determine your range of hearing.

It is important to **increase workplace awareness** about how to reduce noise and protect employee hearing. Exposure to on-the-job noise should be measured.

Removing or reducing noise is the next most obvious step to take. The equipment or work procedure can sometimes be altered to make them less loud. Sometimes machinery may be placed in a sound enclosure.

Employees may also be separated from the noise by distance, or by working in a sound-protected room or enclosure.

When these measures are not possible or effective, **you must wear hearing protection.**

Basically there are two kinds - **earplugs** and **ear muffs**.

**Ear plugs** are inserted into the ear and can be made of disposable foam, reusable plastic, or are mounted on a headpiece or a cord. **Ear muffs** fit over the outer ear. There may be times when both ear plugs and ear muffs must be worn at the same time.

The kind of ear protection you wear will depend on the kind of job you have and the kind of noise you are exposed to. A professional will help you choose the right kind.

Make sure your hearing protection fits properly. Maintain and clean it....and wear it all the time! **Your hearing depends on it!**

## AUDIO SAFETY TALKS!

### WAYS YOU CAN PROTECT YOUR HEARING

Workers can be bombarded by sound every day and hardly notice it, until they've acquired **irreversible** hearing damage. Yet a few simple precautions can prevent or halt damage, as long as you understand the risk and take it seriously. Heard enough yet? Have your workers? If not, try playing them this safety talk. You might have to turn the volume up a bit.

- [To listen to the talk, click this link](#)

## HEALTHY HABITS

### Whuppin' Your Weight

There's good news and bad news about weight gain this year. Reports say that most folks pack on only **one or two pounds** (0.5-1 kilos) during the Christmas season. The bad news? It's still a rapid weight gain, and it's hard to lose. At work, extra weight costs you ease of movement, strains your back and joints, and can make sitting or standing for long periods uncomfortable.



**Here are five fast fixes that can help have you looking, and feeling, better fast.**

1. **Get motivated!** You go nowhere without a destination. Set an attainable goal and give yourself a deadline. To increase your commitment, make a public promise to family or co-workers that affirms your goal. Note your progress on a calendar every day.
2. **Get exercised.** Try parking one block further from work each month, and skip the elevator in favor of stairs. Join a gym, go hiking, take up competitive ping-pong ... anything that gets your heart rate elevated for at least fifteen minutes. Consult a fitness professional and your doctor to ensure you begin your program sensibly.

3. **Get relaxed.** Stress and unnecessary eating often go hand-in-mouth. Take time to get away from the computer and from work. Read a good book, spend time with family or friends, or even indulge yourself in a short nap. These strategies will reduce stress. Prayer and meditation can also be helpful.

4. **Get on track.** Ate too much over the holidays? Recognize that you'll need to work harder to stay on target. If you find your visits to the gym have tapered off, you need to think about why. Sometimes a chat with a friend or relative can help restore your motivation.

5. **Finally—get real.** Remember: all things in moderation. Don't cut yourself off from things you enjoy. Instead, make them part of your routine. Reward your accomplishments with a small treat—a bowl of ice cream, say.

## Nutrition Boosters for Fruits and Veggies

Sure, leafy lettuces, red-ripe tomatoes, and crunchy carrots are good for you. But are you getting all the **nutrients** your produce has to give?

Written by RealAge, Inc., peer-reviewed by Dr. Axel Goetz, November 2006

Fresh fruits and veggies come packed with vitamins, minerals, and phytochemicals. **Or do they?** Turns out it might depend on **how you treat them.**

And no doubt you've wondered if you could be doing your produce pals some kind of disservice in the journey from the grocery store to your stomach.

Does microwaving really zap away the vitamins and minerals? Is it better to buy fresh instead of frozen? And is your body able to absorb all the good-for-you nutrition anyway?

RealAge answers your nutrition questions and outlines a few simple steps to help you get the most from your produce-packed meals.

### Fresh vs. Frozen

**Q.** I've always thought fresh is best when it comes to fruits and vegetables, but now my daughter tells me frozen foods have more **nutrients**. Who's right?

**A.** You're both right. It's true that fresh fruits and vegetables tend to taste better and have more nutritional value than frozen or canned. But that's not always the case.



Fresh is best when it really is farm-fresh and ripe. However, many commercial fruits and veggies are picked before peak ripeness -- which also means before their **nutritional** peak -- to avoid spoilage during transport and storage. And just a few days after harvest, fruits and vegetables begin to lose some of their **nutritive** goodness. What's more, the longer they sit on the shelf -- during transport, in the supermarket, and in your fridge -- the fewer **nutrients** they have left to pass on to you.

On the other hand, fruits and vegetables intended for **freezing** are usually picked closer to the peak of ripeness and are flash-frozen immediately after harvest. The processing does deplete some **nutrients**, but it locks in the rest for up to **12 months**. So in some instances, frozen fruits and veggies may actually have more of the vitamins and minerals your body needs.

**Quick Tip:** To help retain the highest levels of vitamin C, don't thaw frozen veggies before cooking. Studies show that vegetables cooked directly from frozen retain more vitamin C than vegetables that are thawed first.

Read on to find out more do's and don'ts for preparing fruits and vegetables.

For nutrient-rich fresh fruits and veggies, buy what's in season and grown locally. And eat it **within a few days** of purchase. Find your local farmers market with this list from the USDA.

### To Microwave or Not to Microwave

**Q.** Does microwaving really zap all the **vitamins and minerals** from vegetables? If so, what's the best way to cook them?

**A.** The jury's still out on this one. Although some studies suggest the microwave is to blame for sucking **nutrients** out of your food, others point a finger at the water in which they are cooked.

For most fruits and vegetables, any type of cooking lowers the **nutrient** content. So for now, a good rule of thumb is: less is more.

Leave skins on whenever possible. Many fruits and vegetables hold most of their **antioxidants** in their skins. Simply wash well before cooking/eating.

Lightly steam vegetables instead of boiling, sautéing, or roasting. Better yet, go raw with a fresh salad.

If you prefer to blanch your veggies, dip them into boiling water for the least amount of time possible.

The exception is the red tomato. Cooking actually increases its level of **lycopene -- an antioxidant** thought to help prevent certain types of cancer, heart disease, and vision loss.

**Quick Tip:** Drizzle your vegetables with a bit of **olive oil** to help your body better absorb the vitamins and minerals.

Read on to find out more about the best **lycopene** practices . . .

### Finding Foods with Lycopene

**Q.** I don't like the taste of tomato sauce, but I've heard it's a good source of the **antioxidant lycopene**. Are there any other fruits or vegetables that contain lycopene?

**A.** You're in luck. Tomatoes and tomato products may be the main dietary source of **lycopene** for most people, but you can top off your lyco-levels with other fruits, including papaya, guava, watermelon, and pink grapefruit.

**Lycopene** is nature's red and pink paintbrush; it's what gives those fruits their color. In people, it acts as a powerful **antioxidant**.

But it isn't always easy for our bodies to access **lycopene**. Tomatoes, for example, have relatively low levels of the **antioxidant** until they're cooked. Cooking increases the amount of **lycopene**, and adding a little olive or canola oil makes it easier for the body to absorb this healthful substance. That means cooked and processed tomato products, such as tomato sauce, tomato soup, and spaghetti sauce, are all excellent sources of **lycopene**. Just stick with low-sodium, low-sugar varieties of prepared tomato products.

Quick tip: Pair fresh fruit like papaya, guava, watermelon, and pink grapefruit with low-fat (rather than nonfat) yogurt or cottage cheese to help your body better absorb the **lycopene**.

Learn more about **lycopene** with these hand-selected results from RealAge Smart Search.

### Functional Fat

**Q.** I always use fat-free salad dressing to ensure I'm not loading up on extra calories. But I recently heard that full-fat salad dressing is best. Why is this?

**A.** It may seem **counterintuitive**, but it's true. Salad dressing with the fat is best if you're after the **antioxidants** in the salad.

That's because some **antioxidants**, such as carotenoids found in carrots, tomatoes, spinach, and corn, need fat in order to be absorbed by your body. In one study, participants who added full-fat dressing to their salads absorbed more carotenoids than participants who used low-fat, fat-free, or no dressing. But that doesn't mean you should drench your veggies in high-fat, high-calorie dressings.

Instead, make those calories count by pairing fresh salads with a bit of healthy fat. Choose salad dressings with exclusively heart-healthy monounsaturated fats. Ones with a base of olive oil, canola oil, or even avocado are best.

### Beyond fruits and veggies

**Q.** Okay, so nothing beats a fresh salad with olive oil dressing for a **nutritional** punch. But do I have to get all my **antioxidants** from fruits and veggies?



**A.** Nope. **Dark chocolate, red wine, and nuts** also offer **antioxidant**-like substances. They just aren't as low-cal or as good for you as produce. So consider them nice little once-in-a-while treats.

**Tea and spices** are other sources of **antioxidants** that you can load up on to your heart's content.

**Quick tip:** If you're looking to get the **antioxidant** health benefits from dark chocolate (yes, it contains heart-healthy flavanols), **don't** mix it with milk. Recent studies suggest that milk may interfere with the body's ability to absorb flavanols.

### **Give Your Body the Best Advantage**

Any way you slice it, if you eat a **balanced diet** with lots of fruits and vegetables, you're dealing yourself a pretty good hand in the vitamins and minerals game. But by employing a few of these **nutrition-boosting tricks** of the trade, you can turn your nutritional full house into a royal flush. RA

