“Hospital Grade” Televisions versus Consumer TVs
Are Consumer TVs getting a bum rap?

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Affordable TV solutions for savvy healthcare facilities

White Paper

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Consumer TVs vs Hospital Grade Televisions

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BACKGROUND

There is a great deal of misinformation being disseminated in the defense of the enormously high cost of using "hospital grade" televisions versus consumer televisions in patient rooms. Decades ago, highlighting the differences between the two was necessary as CRT televisions were not power efficient. Television display technology in the form of LCDs has made tremendous advances since then. In addition, a new technological innovation can now enable a consumer TV to function like a "hospital grade" television.

ARGUMENTS MADE BY "HOSPITAL GRADE" TELEVISION MFGs

Manufacturers of "hospital grade" televisions argue that consumer TVs cannot pass the same stringent safety standards as "hospital grade" televisions do. These safety requirements are written by Underwriters Laboratory under the standard, UL 60065 Annex Q. The standard No. 60065 represents a standard for safety for Audio, Video and Similar Electronic Apparatus. Annex Q standards, published in 2004, add specific requirements for video apparatus used in health care facilities.

Manufacturers of "hospital grade" televisions contend that consumer TVs are considerably more risky in a patient room environment. Below are several arguments derived from UL standard 60065 Annex Q.

1) AC plugs to power the televisions need a third wire grounding conductor
2) Current leakage of consumer TVs is at unsafe levels
3) Corners of consumer TVs are not rounded

4) Unsafe heat dissipation from consumer TVs

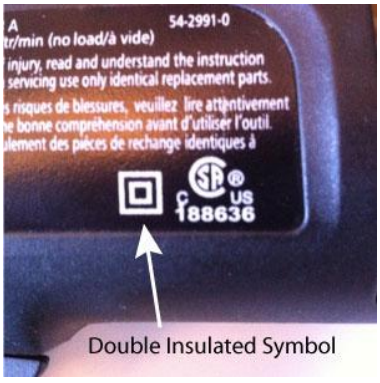
5) Consumer TVs do not have an all-poles switch

RESPONSE TO EACH OF THESE "HOSPITAL GRADE" TELEVISION CLAIMS

1) **Double insulated consumer TVs do not require a third wire grounding conductor**

Today's consumer TVs utilize power more efficiently and are safer for the consumer, thanks in part to the double insulated design. An electronic device, which is double insulated, is completely contained in plastic underneath an outer casing. If the electronic device malfunctions, no live conductor can touch the outer casing due to the insulating plastic.

The symbol for double insulation is shown here:



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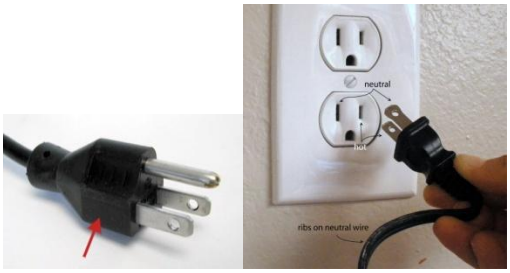
Why is this important?

"Hospital grade" television manufacturers contend that the grounding pin **"reduces"** the possibility of patient shock. Double insulated TVs with a polarized two-prong plug, virtually **"eliminates"** the possibility of patient shock.



2) **Current leakage is at safe levels on a consumer TV**

The current leakage refers to current that could flow from any conductive part of the television to ground if a conductive path was available (e.g. a human body). In order to protect a compromised (less than normal healthy) patient, UL has determined that the maximum current leakage from an electronic device in a patient room is 500 microamperes. The average current leakage for each of the 37 consumer TVs that we tested (see results under "Consumer TVs put to test") was less than 100 microamperes per television.

3) **Rounded corners**

It is true that living room TVs are not required to have rounded corners. However, TVs in patient rooms are generally mounted on a wall opposite the patient's bed at close to ceiling height presenting minimal risk for contact with the corners. Further, the top of the TV tilts down, leaving the bottom of the TV pressed

against the wall and making it highly unlikely that a patient would be harmed on an unrounded corner mounted this way.

4) **Heat dissipation**

UL standard for "hospital grade" television requires a maximum operational temperature rise of no more than 77° Fahrenheit. Of the 37 TVs temperature tested to the UL standard for healthcare facilities, all passed. Do your own informal test as to whether consumer TVs get too hot by touching your living room TV after a full day of watching college football.

5) **All-poles switch for safety**

An all-poles switch is used just in case a wall outlet, installed by a certified and bonded electrical professional, is miss-wired (reverses HOT and Neutral). This potentially could result in a shock or fire hazard; however, a double insulated consumer TV does not require an all-poles switch. It connects to a wall outlet with a polarized two-prong plug. Even if the certified and bonded electrical professional did happen to miss-wire the wall outlet, the design of the polarized two-prong plug would prevent the possibility of shock.

CONSUMER TVs PUT TO THE TEST

We tested a total of 37 consumer TVs (7 different models) to the requirements contained in Annex Q. The TV models included Toshiba, Sharp and Sony. The sizes of consumer TVs tested ranged from 19-inch to 43-inch. All TVs were double insulated.

The tests conducted, contained in Annex Q and applicable to video apparatus intended for use in health care facilities, are shown below.

Q.7.1—Temperature Test*

Q.9.1.1.1—Touch Current Test*

Q.10.2.1—Cleaning Test*

Q.10.3—Dielectric Voltage-Withstand Test*

Q.10.3.2—Insulation Resistance Test*

***All 37 TVs passed the above tests when tested with the HC20 Pillow Speaker Interface Box. We used a Curbell Pillow Speaker for the tests.**

The results of these tests on a large sampling of consumer TVs clearly show that patient safety is not an issue when placing a consumer TV in a patient room environment, especially when in conjunction with a healthcare listed HC20 Pillow Speaker Interface Box.

CAN A CONSUMER TV OPERATE IN A PATIENT ROOM ENVIRONMENT?

Healthcare facilities are always looking for ways to cut costs. At the same time, these facilities constantly try to improve patient comfort and satisfaction. There is a trend away from the functional, sterile, institutional look in patient rooms, toward a more homelike, welcoming atmosphere.

"Hospital grade" televisions have become a specialty item and the cost is considerably higher than that of a consumer TV. This is because manufacturers build additional electronics into the television set to allow the pillow speaker to control the television and transmit the audio back to the patient.

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There is another solution.

Paradigm Multimedia has developed a pillow speaker interface product in the form of an easy-to-use installation kit. The product enables a healthcare facility to use an existing TV, or purchase a consumer TV inexpensively from a myriad of TV suppliers. The HC20 installation kit (about the size of a deck of cards) easily connects to the consumer TV, so that it functions exactly as a "hospital grade" TV, and just as safely.

This purchasing option creates an effective, low-cost healthcare TV solution without the need to purchase expensive "hospital grade" televisions. The healthcare facility can purchase their own LCD/LED TV at the best price they can find, purchase the Paradigm Multimedia HC20 separately, and easily install it themselves.

The installation kit complies with NFPA99 and NEC in a patient room environment, and meets all federal standards for safety.

The three leaders in patient room equipment and accessories, Curbell Electronics, Anacom Medtek and Hill-Rom, have all tested and endorsed this low-cost, healthcare TV solution.

Using the Paradigm Multimedia HC20 Interface Technology will save a hospital, skilled nursing facility, or dialysis center considerable dollars over a "hospital grade" television.