



GS1 Healthcare around the world

Update

GS1 Member Organisations



GS1 Healthcare Local user groups

Local user groups can best work with key partners on local level



- Reach out to and engage key partners on local level for adoption and implementation of global standards
- Contribute and influence global standards
- Work with local regulatory bodies and associations

The power to engage local stakeholders



Local Healthcare User Groups Today



France



Canada



Austria



Russia



Spain



US



Australia



UK



Switzerland



Germany



Malta



Slovakia



New Zealand



Serbia & Montenegro



Macedonia





GS1 Healthcare Australasia (Australia and New Zealand)

Gary Hartley, General Manager, GS1 New Zealand (In Person)

Tania Snioch, Senior Advisor, GS1 Australia (In Spirit)





Healthcare Product ID & Traceability

Pharmaceuticals

- **Australia** – GTIN Allocation for use of NPC with Health Jurisdictions
- Traceability - none

Medical devices

- **Australia** – GTIN Allocation for use of NPC with Health Jurisdictions
 - Traceability - none
-

Pharmaceuticals

- **New Zealand** – Proprietary coding system (Pharmac)
- Traceability - none

Medical devices

- **New Zealand** - none
- Traceability - none



GS1 Healthcare Australasia

Established	October 2006
Priorities	<ul style="list-style-type: none">•Provide Australian and New Zealand input into the work of the global HUG•Address and document Australian and New Zealand specific Healthcare issues and bring these to the attention of GS1 Healthcare for incorporation into this group's work plan•Drive implementation of the GS1 standards in the Australian and New Zealand Healthcare sectors.
Work Teams	<ul style="list-style-type: none">•Leadership•Complete group
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">•Medical Industry Association of Australia•Medical Industry Association of NZ•Standards Australia

Healthcare Participants (as at 13th June 2008)

Manufacturers

3M Australia Pty Ltd
Abbott Australasia Pty Ltd
Aventis Pharma
B. Braun Australia Pty Ltd
Baxter Healthcare
BD (Becton Dickinson)
Biomet Australia
Boehringer Ingelheim Pty Limited
Bosco Medical Australia
CSL Bioplasma
Dade Behring ANZ
Douglas Pharmaceuticals (NZ)
Draeger Medical
GSK Australasia
Kimberly-Clark
Merck Sharp & Dohme
Novartis
Pfizer Pty Ltd
Rem Systems
Resmed
Smiths Medical
St. Jude Medical Australia Pty Ltd
Sydney IVF
Terumo Corporation
Welch Allyn Australia Pty Limited
Wyeth Australia Pty Ltd

Distributors/Wholesalers

Aaxis Pacific
Australian Pharmaceutical Industries (API)
Central Hospital Supplies
CH2 [HUG Australasia Chair]

Hospital/Pharmacy

National Pharmacies
The Alfred Hospital
Southern Health

Associations

GS1 Australia
GS1 New Zealand
Standards Australia
Researched Medicines Industry
Medical Industry Association of Australia
Medical Industry Association of NZ
Australia Post

Governmental Bodies

Department of Health (South Australia)
Health Corporate Network - WA Health
Health Technology - NSW Health
National Blood Authority
NEHTA
Health Support - NSW Health
Queensland Health
Taranaki District Health Board

GS1 Healthcare Accomplishments

- 8 physical meetings to date
- Membership continues to grow
- Survey of membership – aspirations and current status
- Identification of education needs
- Education program in place – to be repeated 3x pa
 - 6 sessions, 1 hour webinar
 - What’s happening in Healthcare?
 - GS1 numbering for Healthcare
 - GS1 bar codes for Healthcare
 - National Product Catalogue Overview
 - eMessaging for Healthcare
 - EPC/RFID for Healthcare

Healthcare Next steps

- Repeat education series – October/November
- Next meetings –
 - **July 21st 2008** (Kimberly-Clark) (AIDC focus) incl:
 - Brigham and Woman's - Tom Cooley
 - Prof Alan Merry – University of Auckland
 - **November 26th 2008** (Pfizer)
- Commence case study and implementation drive



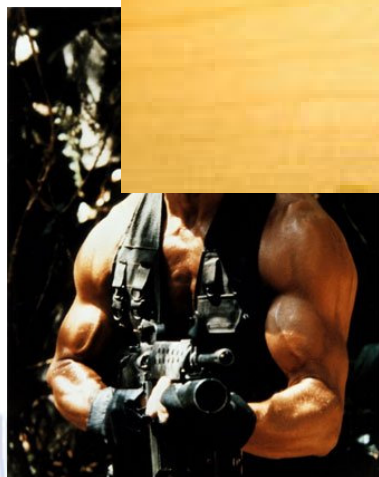


GS1 Healthcare Austria

Barbara Dorner



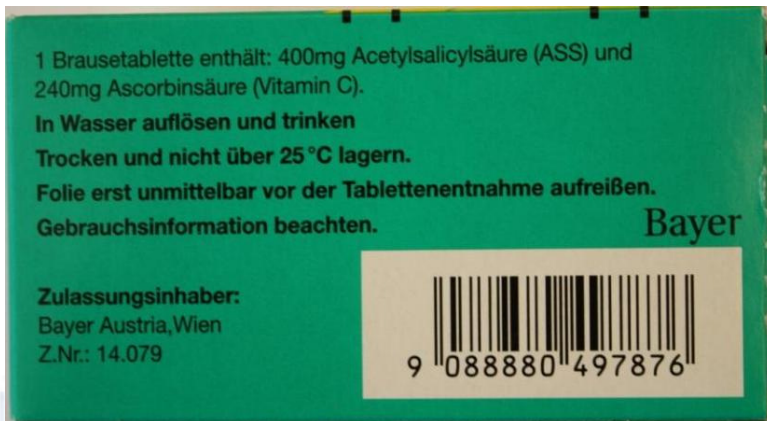




GS1 Healthcare Product ID & Traceability

Pharmaceuticals

- Pharmaceuticals which are sold in pharmacies (not Rx only) have to have a PZN.
- PZN is embedded in EAN13:
90 + 8888 + PZN + checkdigit



Medical devices

- instruments (used in surgery) have to be traced (MPG §91-93)





Established	June, 2007
Priorities	<ul style="list-style-type: none">•Motivation of as many participants as possible•Changing marking pharmaceuticals from PZN embedded in EAN-13 to GTIN + Lot + Exp. Date (GS1 DataMatrix?)•Marking medical devices (different international requirements)
Work Teams	<ul style="list-style-type: none">•Appl.Stand. + carrier (established March 08) – Main focus on PZN in EAN13
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">•Austrian Federal Ministry of Health•Pharmig (Association of pharmaceutical manufacturers)•ARGE Pharmazeutika (Association of pharmaceutical wholesalers)

Healthcare Participants

• **Manufacturers**

- Baxter
- Ebewe Pharma
- MedEL
- Boehringer Ingelheim
- GSK
- Croma Pharma

• **Distributors/wholesalers**

- Herba Chemosan
- Richter Pharma

• **Hospital/Pharmacy**

- Vinzenz Gruppe (7 hospitals)
- AUVA (12 hospitals)
- Wiener KAV (24 hospitals)

• **Associations**

- Pharmig
- Austromed
- ARGE Pharmazeutika
- Austrian Chamber of Pharmacists
- Austrian Chamber of Medical Doctors
- University of applied sciences, Krems

• **Governmental bodies**

- Austrian Federal Ministry of Health, Women and Youth
- AGES

GS1 Healthcare Accomplishments

- Setted up awareness of importance of global standards in healthcare
- Setting off project with hospital association re. marking containers/trays for sterilisation processes following GS1 Standards
- Members of the HUG Austria are already »making acquisitions« of prospective members



GS1 Healthcare Next steps

- Working on a study regarding taking the PZN out of the EAN-13 – benefits and costs
- Biggest Austrian hospital association requested for marking instruments/containers/trays in sterilisation (24 hospitals) + logistics in the hospital pharmacy
- Coming closer with pharmaceutical manufacturers
- Motivating participants in healthcare – especially politics activity
- GS1 standards should be recommended in law for traceability and marking
- Enforcing role of GS1 Healthcare Austria as platform No.1 for traceability in healthcare
- Training courses for healthcare sector
- Supporting projects with hospitals (patient ID, staff ID, sterilisation)



Proud to present



GS1 Healthcare Conference

Vienna / Austria

March 17 – 19, 2009





GS1 Healthcare Canada

Alicia Duval
Vice President, Healthcare





Healthcare Product ID & Traceability

Pharmaceuticals/medical devices

Product ID

- No regulatory requirements exist for bar codes on pharmaceuticals or medical/surgical devices
- Regulatory issues regarding voluntary bar coding may arise if suppliers need to change their labels to accommodate a bar code
- Regulatory concerns are based on the labelling and packaging requirements outlined in the Food and Drug Regulations (FDR). Bar code content, specification and/or symbology are not concerns as long as the product label its human readable language adhere to existing labelling and GMP requirements

Traceability

- Bill C51 (April 2008)- GS1 Canada Applauds the Federal Government for Prioritizing Food, Product and Consumer Safety



Healthcare Patient Safety Priorities

June 18, 2008 Canadian Press: The CNA is calling for the health-care system to speed up the introduction of electronic health records.

"We're so far behind in a system that costs Canadian citizens billions of dollars - we need to have that infrastructure. For nurses it means being able to have the right information at the right time at their fingertips as they're caring for patients," states Marlene Smadu, President, Canadian Nurses' Association.

Estimate shortages of 25% by 2015.





Healthcare GS1 Healthcare Canada

Established	December 2007; Official Launch - June 2008
Priorities	<ul style="list-style-type: none">• <i>Healthcare eSupply Chain Standards Proposal – OntarioBuys (Ministry of Finance)</i><ul style="list-style-type: none">• Community management• Standards development• Education & communication• Implementation support
Work Teams	<ul style="list-style-type: none">• Healthcare Board• Healthcare Technical Standards Work Group• Pharmacy Board• Pharmacy Technical Standards Work Group
Strategic Partnerships & Collaboration	<ul style="list-style-type: none">• CareNET Services Inc. (430+ hospitals)• Federal & provincial governments• Industry associations• Patient safety agencies



Canadian tipping point of action



Associations Align to Advance Patient Safety and Healthcare Supply Chain Efficiencies

Toronto, ON, May 26, 2008 – Members of CareNET Services Inc. (CareNET) voted on Friday in favour of aligning with GS1 Canada. Together, the organizations will dedicate collective focus on making Canada's healthcare system safer and more efficient through the development and implementation of global supply chain standards.

CareNET represents 54% of Canadian hospitals, leading suppliers, GPOs and Solution Providers



Healthcare CareNET Healthcare Board

•Manufacturers/Distributors

- 3M Canada
- Baxter Canada
- Canadian Hospital Specialties
- Cardinal Health – Alaris Products
- HealthPro Procurement
- Hospira Healthcare Corp
- Johnson & Johnson Medical Products
- Medical Mart
- Source Medical
- Trudell Medical
- Tyco Healthcare

•Hospital

- Chatham-Kent Health Alliance
- Hamilton Health Sciences
- Healthcare Materials Management Services
- Health Sciences Centre
- Humber River Regional Hospital
- Interior Health Authority
- Medbuy Corporation
- Sault Area Hospital
- Shared Services West



Healthcare Healthcare Technical Work Group

• **Manufacturers**

- Baxter Corp.
- Cook (Canada) Inc.
- Cardinal Health – Alaris Products
- Johnson & Johnson Medical Products
- Medical Mart
- Nestlé Canada Inc.

• **Distributors/GPOs/ Solution Providers**

- McKesson Provider Technologies
- Emergis – A Telus Company
- GHX Canada
- HealthPro Procurement
- Logibec Groupe Informatique Ltée
- Medbuy Corporation
- Medical Information Technology
- Ormed Information Systems Ltd.

• **Hospital**

- Capital District Health
- Capital Health
- Centre Hospitalier Universitaire de Québec
- Grey Bruce Health Services
- Hamilton Health Sciences Corporation
- Healthcare Materials Management Services
- Interior Health Authority
- Plexxus



Healthcare Healthcare Pharmacy Board

•Manufacturers

- Apotex
- Sanofi Pasteur

•Distributors/wholesalers

- McKesson Canada
- GAMMA Wholesale Drugs (London Drugs)

•Hospital/Pharmacy

- Katz Group Canada Ltd.
- London Health Sciences -- Canadian Society of Hospital Pharmacists
- METRO Inc.
- Shoppers Drug Mart Corporation

•Associations

- Canadian Association of Chain Drug Stores (CACDS)
- Canadian Association for Pharmacy Distribution Management (CAPDM)





Healthcare Pharmacy Task Group

•Manufacturers

- Apotex
- AstraZeneca Canada Inc.
- Bayer Inc.
- Merck Frosst Canada Ltd.
- Novopharm
- Pfizer Consumer Healthcare
- Sandoz Canada
- Sanofi-Aventis
- Schering Canada
- Wyeth Consumer Healthcare

•Distributors/wholesalers

- McKesson Canada
- McMahon Drug Wholesaler

•Hospital/Pharmacy

- Le Groupe Jean Coutu
- London Drugs
- Metro Inc.
- Proxim
- Purdue Pharmacy
- Shoppers Drug Mart
- Sobeys Pharmacy/Lawton Drugs

•Associations

- Canadian Association of Chain Drug Stores (CACDS)
- Canadian Association for Pharmacy Distribution Management (CAPDM)
- Rx&D

ECCnet Registry: Canada's national product registry

Over **370,000** unduplicated products loaded

- Identified by the Global Trade Item Number (GTIN Bar Code)

Over **13,000** prescription (Rx) products

- Approximately 50 Rx Vendors

Over **10,000** over-the-counter (OTC) products

Over **450** behind-the-counter (BTC) products

Over **55,000** foodservice products

Over **2,500** suppliers participating

Next – Medical Devices



GS1 Healthcare **VICS Award**

GS1 Canada won the 2008 Voluntary Inter-industry Commerce Solutions (VICS) Award for Supply Chain Excellence for enhancing ECCnet Registry with the addition of over **30 new Rx-related** attributes

- Efficient: Allows trading partners to exchange accurate, up-to-date product data
- Sustainable: Eliminates paper processes





GS1 Healthcare Next Steps

- Community management
 - Engage national stakeholders
- Standards development
 - Product identification standards
- Communications outreach
 - Multiple resources to keep stakeholders informed & engaged
- Implementation support
 - Education modules
 - Implementation guidelines





GS1 Healthcare France update

Valérie Marchand



GS1 Healthcare Product ID Pharmaceuticals



AFSSAPS Regulation

Avis au JO du 16.3.2007 / SAN M 0720920V

**Datamatrix with
CIP 13 + lot + expiry date
from janvier 1st 2011**

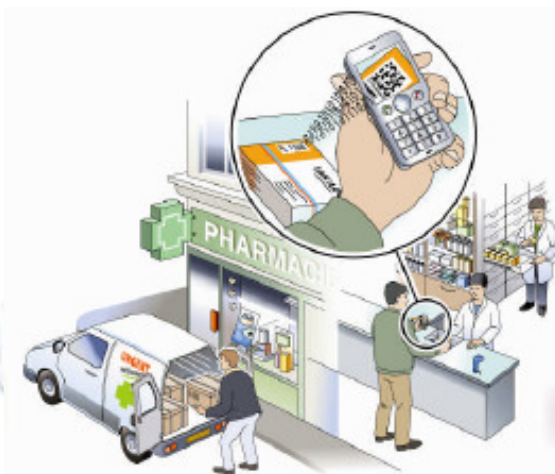
1.01.2011

All lots sold on the French market must have a Datamatrix using GS1-128 AI's and including :

(01) Authorized market code in a GS1 structure (CIP 13)
+ Lot nb + expiry date

We are working on a document with CIP in order to help suppliers to manage the transition period with some identified issues :

- When pharmacies will be able to read Datamatrix ?
- Do suppliers have to maintain a linear barcode ?
- When do they have to migrate all the products ?
-

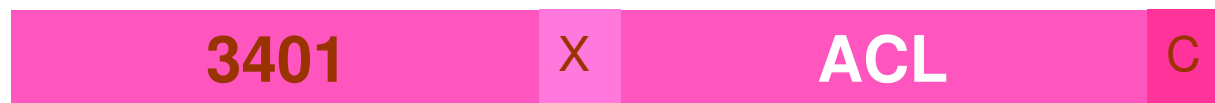


Healthcare Product ID Medical Devices

ACL, association of MD suppliers maintain a database for MD and send the data to the pharmacies. They need to manage different codes : GTIN, ACL 13 and ACL 7, as the reimbursement organisms don't integrate 13 digits.

Reason why we agreed to “re-sign” the agreement.

The agreement stipulates that companies can choose to identify their product with a «global GTIN» or an ACL code in a GS1 structure «ACL 13»



The Social Security still use 7 digits to register the products and ensure the reimbursement

ACL allocates ACL13 and ACL7 to suppliers choosing GTIN solution
(they need to be ACL member)



Healthcare GS1 Healthcare France

Established	May 2007
Priorities	<ul style="list-style-type: none">• Data Sync• Traceability in the hospitals• A global Classification• Answer the regulations : drugs, instruments, acts pricing
Work Teams	<ul style="list-style-type: none">• Healthcare user group• CologH (hospital logisticians)• Work with suppliers to describe their products
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">• Cladimed for classification• Europharmat (MD traceability)• CIP/ACL• GCS UNIHA (51 hospitals)

GS1 Healthcare Participants

Manufacturers

- 3M France
- AGA MEDICAL
- AIR LIQUIDE SANTE FRANCE
- AMGEN
- B BRAUN MEDICAL
- SAS BAXTER BIOSCIENCES
- BOSTON SCIENTIFICS FRANCE SA
- COLOPLAST MANUFACTURING
- FRANCE COOK FRANCE
- EVOLUTIS SAS
- HEMODIA SAS
- HOSPIRA SAS
- KCI MEDICAL
- KYPHON EUROPE
- L.F.B. LABORATOIRE FRANCAIS
- LABORATOIRE GAMIDA
- LANDANGER
- LILLE HEALTHCARE SAS
- MERIAL SAS
- NOVO NORDISK PHARMACEUTIQUE
- S.A.S ORTHOMED
- SA PETERS SURGICAL
- PFIZER FRANCE
- SANOFI AVENTIS FRANCE
- SMITH & NEPHEW SAS
- SOPHYSA
- STRYKER FRANCE
- TERUMO EUROPE

Hospitals

- CH BICHAT CLAUDE BERNARD
- CH EUROPEEN GEORGES POMPIDOU
- CH SAINT LOUIS HOSPICES CIVILS DE LYON
- GCS UNI.H.A (52 hospitals)
- CH ARMAND TROUSSEAU
- CH PONTOISE
- CHRU LILLE
- CHRU STRASBOURG
- CHU AMIENS
- CHU DIJON
- CHU NANTES
- CHU NICE
- CHU ROUEN
- CACH NANTERRE
- AP – HP NSI/SIR
- H AP - HM

Associations

- GMSIH
- SYNDICAT INTER HOSPITALIER DE BEAUVAIS
- EUROPHARMAT
- CIP/ACL

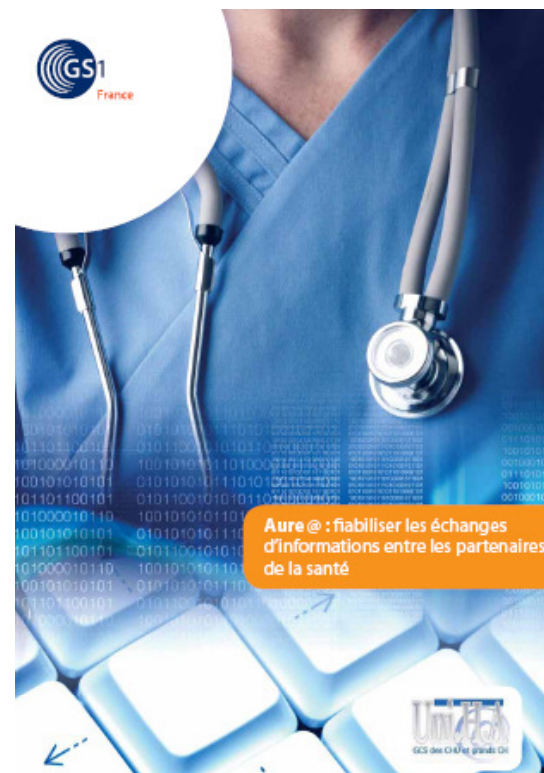
Governmental bodies

- Ministère de la santé

Distributors/wholesalers

- AEXXDIS
- DEPOLABO - PHARMA LOGISTIQUE
- GEODIS
- CERP ROUEN / CERP FRANCE

GS1 Healthcare New brochure



AURE@ : les fonctionnalités

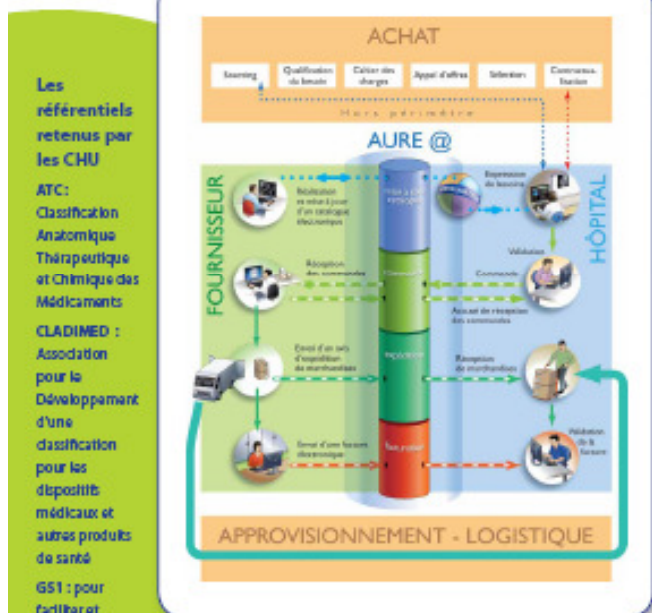
AURE@

o involve suppliers and hospitals on the e-procurement platform

headed by 17 university hospitals)

We tried to explain on both side why do they need to use it, and what kind of benefit they could expect

GCS UNIHA at GS1 France board



Healthcare New brochure

Healthcare GS1 user guide line :

- To help new healthcare members, give them an overview of GS1 standards
- which GS1 standards are used for the healthcare sector,
- where could they find more technical information.

Mostly to be downloaded to be updated when needed.



Healthcare New brochure

- GTIN allocation rules in French
- And still translate all the GS1 Healthcare news letters, press release, etc.



GS1 Healthcare New barcodes audit

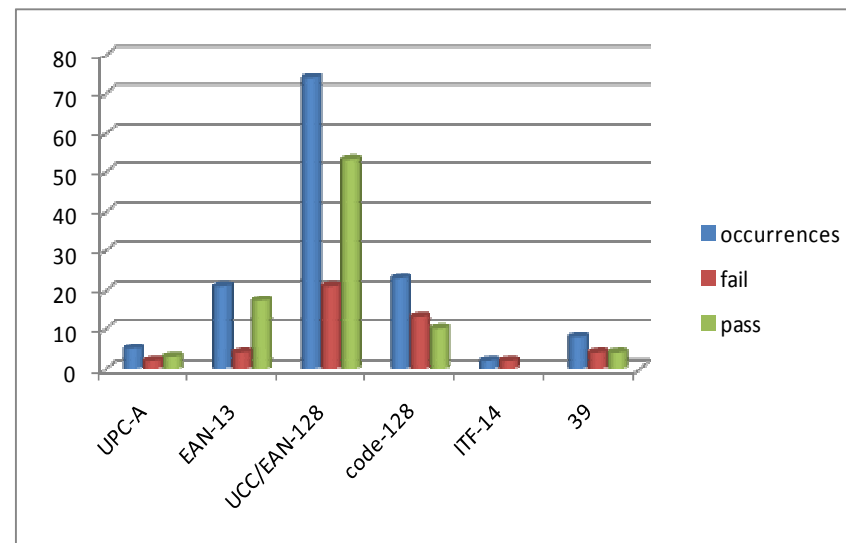
Audit of MD stock in a clinic in France :

- 200 beds
- 171 suppliers
- 91 barcodes read
- 849 references (idem in Dijon)

Status :

- 50% of the suppliers print a GS1 barcodes (some of them can't be read for different reasons, size, quality, wrong codification, etc.)
- This represent 80% of the references

- **We have listed all the suppliers registered in this clinic and the type of data printed in their barcodes**



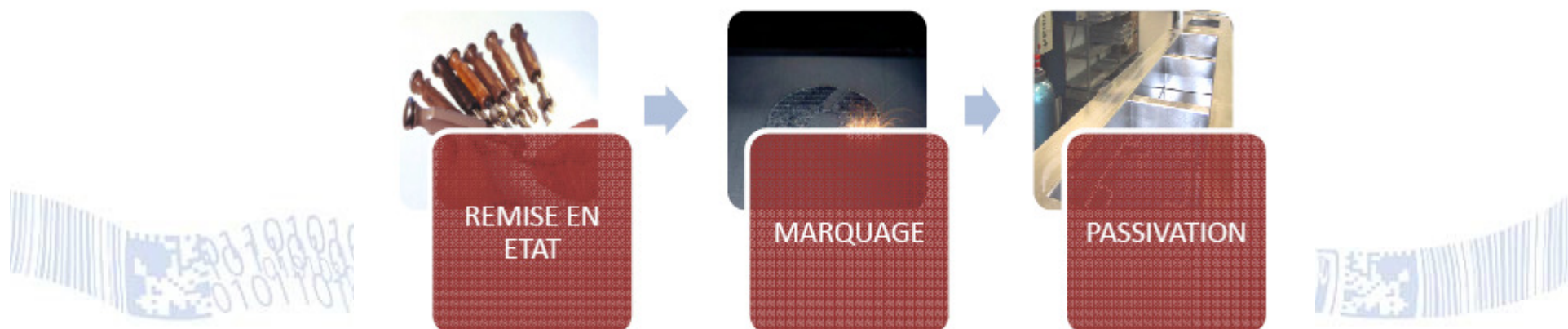
GS1 Healthcare « first mini Datamatrix »

Landanger, French surgical instruments suppliers is able to print quite 100% of his production using a new technology and print a “mini Datamatrix” (on needle for ex.) with GTIN and serial number.



Taille x-module = 0,110mm

Also offers the possibility to print the existing park of instruments with a special service in order to be sure that the print doesn't affect the instrument.



Healthcare Next steps

- What data do we need to manage to answer the different traceability requirements
- Start a pilot for healthcare waste management process
- Help suppliers to fill the e-procurement catalog
- Set up a group and a pilot on anti-counterfeiting using both solution : RFID and Datamatrix with secured information

• ...





GS1 Healthcare Germany

**Bettina Bartz, Senior Projectmanager
GS1 Germany**





Healthcare Product ID & Traceability

Pharmaceuticals

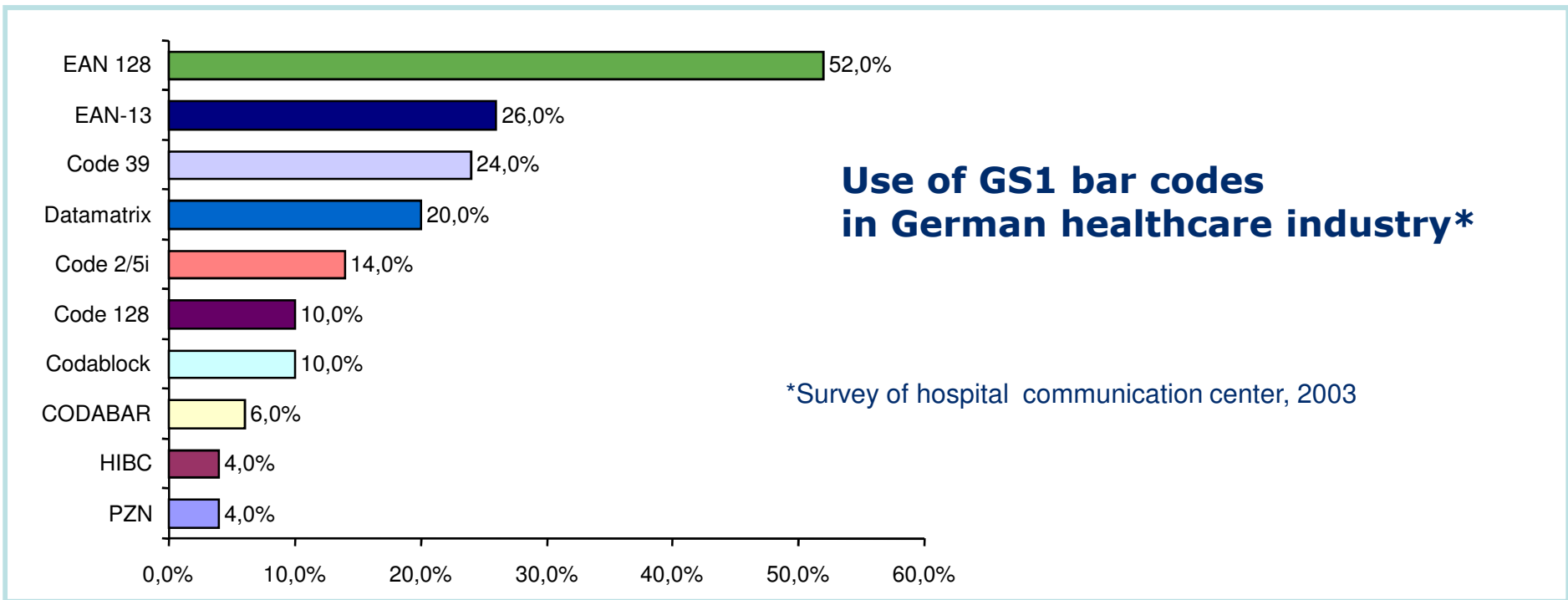
- Regulatory requirement for bar coding: unique bar code must be on the packaging
- Pharmaceutical associations & Health Insurance agreed to use PZN in code 39

Medical devices

- No regulatory requirements
- Many manufacturers use EAN13 and EAN128 to identify the products



GS1 Healthcare Product ID Medical Devices





Established	12. June 2007
Priorities	<ul style="list-style-type: none">• Allocate the needs and requirements of the german healthcare• Give information transfer from the german group to GS1 Healthcare and back • Translate results of the GS1 Healthcare and disseminate into the german market• Spread the results in best practice examples and application recommondation• Starting pilot projects and enhance the implementation
Work Teams	<ul style="list-style-type: none">•Expert team: product database in healthcare
Strategic Partnerships and Collaboration	<p>Associations from wholesaler and manufacturer</p> <ul style="list-style-type: none">• VFA – Verband forschender Arzneimittelhersteller e. V.• BPI – Bundesverband der pharmazeutischen Industrie• PHAGRO Bundesverband des pharmazeutischen Großhandels e.V.• BVMed – Bundesverband Medizintechnologie e.V.

Steering Committee GS1 Healthcare Germany

Pharmaceuticals

Carsten Büttner
Boehringer Ingelheim Pharma
GmbH & Co.KG

Medical Devices

Volker Zeinar
B. Braun Melsungen AG

Medical Devices

Alfons Rathmer
3M Medica GmbH



Hospitals

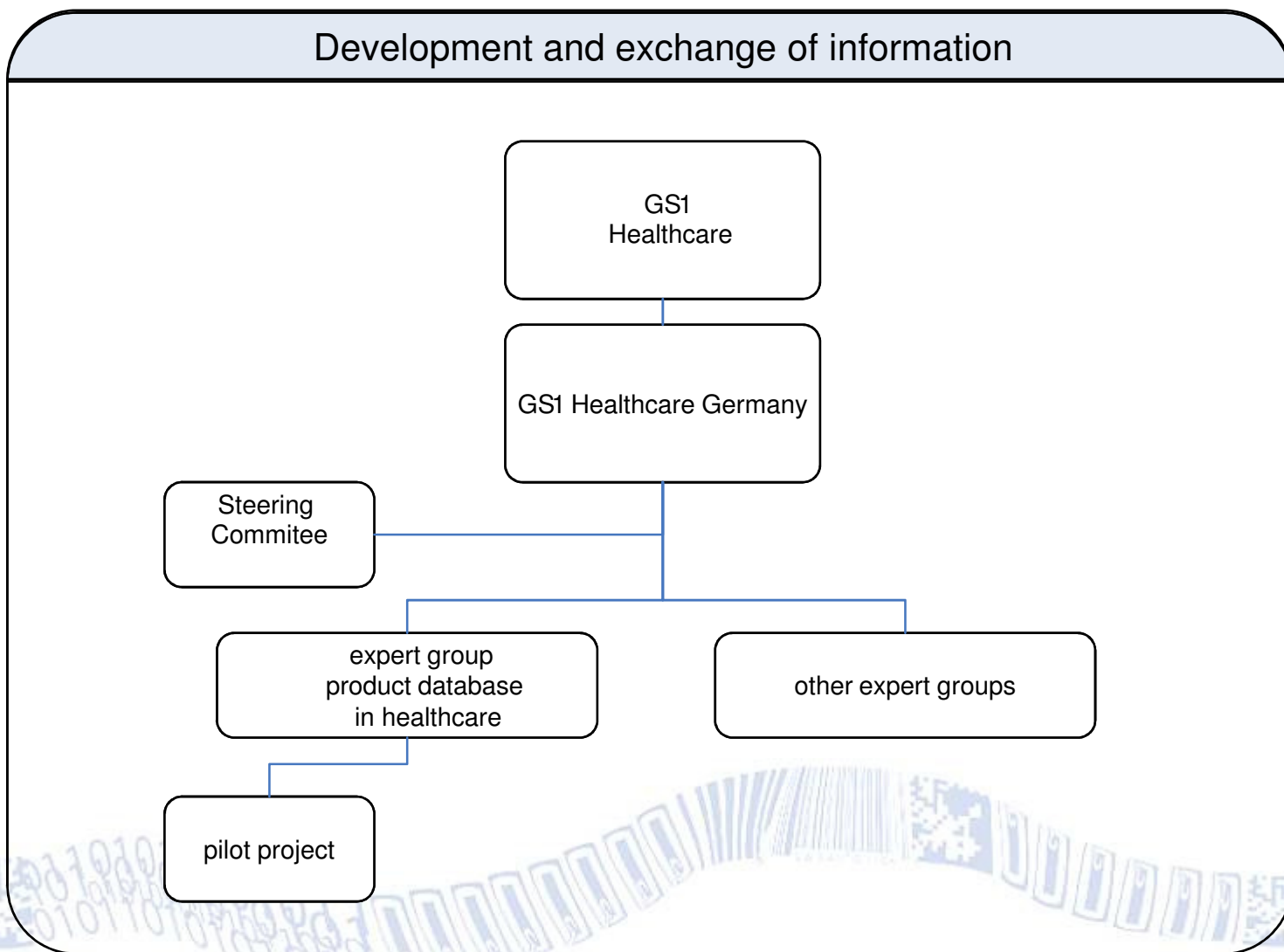
Holger Raphael
Marienhospital Herne

Hospitals

Frank Brüggemann
Comparatio Health GmbH

Medical Devices

Klaus Schüler
P.J. Dahlhausen & Co. GmbH



GS1 Healthcare Accomplishments

- memorandum of understanding has been agreed by major lobbying groups like



- want to use GS1 Standards for product identification of pharmaceuticals



Healthcare Next steps

- implement DataMatrix including expiry date, batch and serial number
- however prefix solution has to be embedded within GTIN structure including the national drug code (PZN)

=> solution suggestion by GS1 Germany :

- pharmaceutical EAN for pharmaceuticals
for the time being, no change for medical devices
- long term solution will use GTIN





GS1 Healthcare Russia

George Nasonov
COO – GS1 Russia
Head of GS1 Russia Healthcare





GS1 Healthcare Product ID & Traceability

Pharmaceuticals

- Healthcare Ministry regulation (since 1997) requiring that all pharmaceuticals sold in Russia must be identified with a GTIN. GTINs are used as unique identifiers in the Russian Healthcare Ministry database of pharmaceuticals
- Traceability requirements - none

Medical devices

- No regulatory requirements
- Traceability requirements - none





Healthcare GS1 Healthcare Russia

Established	Jan. 16, 2008
Priorities	<ul style="list-style-type: none">• Patient safety by preventing and reducing errors by data capture, better (reliable) documentation, adoption of global standards, with the primary focus on automatic identification• More efficiency in the internal supply chains
Work Teams	<ul style="list-style-type: none">• GOST R / Technical Committee 355 « Automatic Identification » Subcommittee 8 « GS1 Healthcare Russia »
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">• Not yet – under discussion

Healthcare Participants

•Manufacturers

- Alsi Pharma Ltd
- Akhtamar Ltd
- Diagnostic Systems Ltd

Distributors/wholesalers

•Service providers

- Service Plus Ltd (Moscow)
- DataKrat Ltd (Ekaterinburg)
- SA2 WorldSync Russia (formerly SINFOS Russia)

•Hospital/Pharmacy

- Hematology Center at the Russian Academy of Medical Sciences
- Moscow City Blood Transfusion Center
- Ufa City Blood Transfusion Center

•Associations

- GS1 Russia
- Automatic Identification and Mobility (AIM) Russia
- International Foundation for Automatic Identification (IFAI)

•Governmental bodies

- Russian Federal Research Center for the Examination of Medical Products



Healthcare Accomplishments

- Preliminary consultations with interested parties from industry and regulatory bodies
- GS1 Standards in Healthcare & GS1 Healthcare User Group - Russian editions of brochures will be available in hard copies in July



GS1 Healthcare Next steps

- Speed up outreach and engagement of hospitals
- Contact and involve local regulatory bodies and trade associations so that they are aware of global activities and developments





GS1 Healthcare Serbia

Branislava Mitic



Pharmaceuticals

Law on Medicinal Products and Medical Devices:

- **Article 75 (Marketing of Medicinal Products)**

The holder of the wholesale authorization for medicinal products and the manufacturer, shall keep records on the type and quantity of imported or exported medicinal products, records on sold medicinal products (per package type) in the Republic of Serbia as well as records on medicinal products imported for research and therapy

Records referred to in Para. 1 of this Article shall contain:

- 1) The name of the medicine, the classification and identification (ATC, ATC-vet and EAN (**GTIN**) code, the form, strength and packaging of the medicine)

...

... Pharmaceuticals

- Article 88 (Labeling of Medicinal Products and Patient Information Leaflet)

The marketed medicinal product must include at least the following data on its outer package:

...

7) The expiry date of the medicinal product

...

12) Number of the batch and EAN (GTIN) code

...

Regulation for medicinal products (marking the basic outer package), 2008, obliged the use of GTIN - EAN (ISO/IEC 15420)

Medical devices

Low on Medicinal Products and Medical Devices:

Article 129

(Labeling of Medical Devices and Patient Information Leaflet)

Every medical device with a marketing authorization ... shall include at least:

...

- 5) Expiry date (indicated on both packages, individual and batch packaging) ;
- 6) Batch number;

...

- 11) Current identification code (EAN (GTIN) code)

...



Established	24 October 2006
Priorities	<ul style="list-style-type: none">- to strengthen legal regulation- to gather representatives of participants in healthcare chain to agree what are the common requirements to reach the patient safety- to help users (education, participation in projects, etc.)-marketing activities,...
Work Teams	•No separate teams
Strategic Partnerships and Collaboration	Members of the Team

Healthcare Participants

•Manufacturers

- Hemofarm

...

•Distributors/wholesalers

- Apoteka Beograd
- Velefarm

...

•Hospital/Pharmacy

- Zutic Clinic

•Associations

- Association of Medicines Manufacturers

•Governmental bodies

- Ministry of Health
- Medicines and Medical Devices Agency
- Fund for Healthcare Insurance



Accomplishments

(use in one hospital)

1. Patients - **GLN**
2. Services - **GTIN**
3. Medicines - **GTIN**



GS1 Healthcare Accomplishments

Medicines and Medical Devices Agency of Serbia published
The National Register of Medicinal Products (2008)
in which medicines are identified with **GTINs**.

METHOTREXATE - PFIZER (PERTH) PTY. LIMITED - Australija
metotreksat - L01BA01 ANTINEOPLASTICI
L01BA analozi folne kiseline

(SZ)	0034180	rastvor za injekciju; 50mg/2mL; bočica, 5x2mL	Cena	2234,3din
	8606007410976		1133/2006/12	06.07.2006
(SZ)	0034181	rastvor za injekciju; 500mg/20mL; bočica, 1x20mL	Cena	2350,1din
	8606007410983		1131/2006/12	06.07.2006

Doziranje: *akutna limfoblastna (megaloblastna) leukemija*: 1-2 puta po 15-30mg/m² nedeljno i.m., ili 2,5mg/kg na 14 dana i.v. (održavanje remisije); *horiokarcinom i drugi trofoblastni tumori*: 15-30mg dnevno i.m., 5 dana na 1-2 nedelje u 3-5 kura; *psorijaza*: 10-25mg jednom nedeljno i.m. ili i.v.

Paralelni lekovi: Methotrexat, Methotrexat Pliva - Lachema 5, Methotrexat Pliva - Lachema 50

METHYLDOPA - PANFARMA D.O.O. - Srbija
metildopa - C02AB02 ANTIHIPERTENZIVI
C02AB metildopa

△ (R)	1103432	tableta; 250mg; blister, 2x10 kom	Cena	84,1din
	8600097400657		3/2-10-9791	23.12.2002

Doziranje: *esencijalna hipertenzija, renalna hipertenzija, hipertenzija u trudnoći, sprečavanje menopauzalnih napada vrućine*: odrasli 2-3 puta po 250mg, zatim doza održavanja 500mg-2000mg dnevno, maks. 3g dnevno; deca 10mg/kg dnevno, maks. 65mg/kg dnevno podeljeno u 2-4 doze; uzima se u toku ili neposredno posle jela.

Paralelni lekovi: Metildopa

METHYLERGOMETRIN - PANFARMA D.O.O. - Srbija

Healthcare Accomplishments

Procedure for adoption the ISO standard for Data Matrix as national standard (ISO/IEC 16022) is in progress. It is translated on Serbian language.

We intervened for rapid adoption by Serbian Institute for Standardization.



GS1 Healthcare Accomplishments

Our big pharmacy institution, Apoteka Beograd, together with Serbian Fund for Health Insurance and one healthcare center started the pilot project of **coding** the data of **medical prescription** in **DataMatrix** format using **Als**.

It also use electronic messages for invoice and despatch advice. GLNs are used for identification of business partners.

Original Prescription Form (Recept) from Fijiala Beograd and Dom zdravlja Voždovac. The form includes patient information, a barcode, and a DataMatrix code. The prescription is for NORVASC 5 mg and is signed by Prim. Dr. Zorica Novaković. The form is stamped with 29 MAY 2008 and 10:12.



06. 3F - 1
FIZIČNE I FARMACEVTSKE OPREMA I PRILAGODBE ZA SLOBODNE PROMETNE TROŠAKOVI

Filijala Beograd
300339954269

Marinković Milutin
PEKA PAVLOVIĆA 84

1 3 1 1 9 6 1 7 1 4 0 2 7 1814
1 3 1 1 9 6 1 7 1 4 0 2 7
1 0 0 4 4 9 3 7 2 4 0 2590
2 4 8 0 0 0 0 0 1 3
5 3 9

Dom zdravlja Voždovac
0 7 0 2 8 5 4 7
1 4 0 2 7 3 5

Rp. NORVASC 5 mg

Prim. Dr. Zorica Novaković

2 9 0 5 2 5 0 8 3 3 9 0 9 6 6 4 3

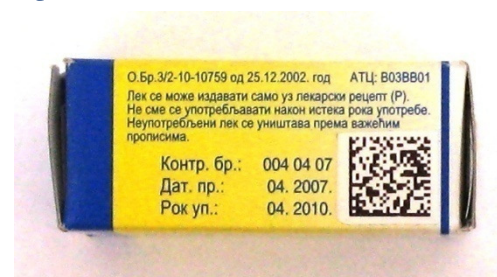
129 MAY 2010

(1)300339954269(2)30(3)Milutin(4)Marinkovic(5)PEKA PAVLOVICA
84(6)1311961714027(7)1311961714027(8)1
0044937240(9)2480000013(10)539(11)181
4(12)0(13)0(14)0(15)1402735(16)I10(17)07
028547(18)20080529(19)30006643

GS1 Healthcare Next steps

Plan is to gather big manufacturers and convince them to use **Data Matrix** on primary containers with **GTIN, batch number and expiry date**

... and, also to mark **logistic units**.



Initiatives toward Ministry of Health for creating regulations for **marking logistic units** and **unit doses**.

Actions toward some hospitals for using GS1 standards.
Continual educational and marketing activities.





GS1 Healthcare Slovakia

Ladislav Janco



Healthcare Product ID & Traceability

Pharmaceuticals

- Regulatory requirements for bar coding - law 140/98 - EAN code (either EAN 8 or EAN 13) must be on the packaging
- Law is in force since 1998 - enforced by distributors and pharmacists

Medical devices

- No law connected to labeling with barcodes
- New amendment of the law states the same conditions as for the drugs (not voted on yet)





Healthcare **GS1 Healthcare Slovakia**

Established	29. 4. 2008
Priorities	<ul style="list-style-type: none">•Better control of the labeling barcodes•GS1 system for medical devices
Work Teams	<ul style="list-style-type: none">•Medical devices•Pharmaceuticals
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">•Ministry of healthcare•Slovak association for standardization of pharmaceutical information

Healthcare Participants

•Manufacturers

- Zentiva
- Pfitzer
- Chirana
- Boehringer Ingelheim Pharma
- Ozone Laboratories Slovakia
- Johnson & Johnson s.r.o.
- Roche Slovensko, s.r.o

•Hospital/Pharmacy

•Associations

- Chamber of pharmacists
- SK-Med (EUCOMED)
- Chamber of healthcare professionals

•Governmental bodies

- Ministry of healthcare

•Distributors/wholesalers

- Phoenix



Healthcare Accomplishments

- Amendment of the law concerning labeling of the medical devices with the barcode



Healthcare Next steps

- Implementation of GS1 standards into the official eHealth strategy
- Better control of the assigned numbers by the Slovak drug administration





GS1 Healthcare [Switzerland]

[Christian Hay]



GS1 Healthcare Product ID & Traceability

Pharmaceuticals

- registration # has to be printed in human readable form
- GMP/GDP/GSP)
- weak politic pressure



Medical devices

- no legal requirement for barcoding
- CE mark or equivalent mandatory
- Reimbursement price is a problem
- no special traceability requirement, except for implants



Healthcare GS1 Healthcare Switzerland

Established	9 December 2005
Priorities	<ul style="list-style-type: none">•Secure information link with Global Healthcare•Dynamise GS1 activities in Swiss HC
Work Teams	<ul style="list-style-type: none">•Communication•Delivery process enhancement•Safe medication (bed side scanning)
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">•Swissmedic•Refdata Foundation



Healthcare Participants (only GS1-CH members)

•Manufacturers

- [Actelion]
- [Alloga]
- [AstraZeneca]
- [Basilea Pharmaceuticals]
- [CSL Behring]
- [Globopharm]
- [Janssen-Cilag]
- [JnJ Medical]
- [Novartis]
- [Pfizer]
- [Plus Ortho / S&N]
- [Salzmann-Medico]
- [Sanofi-Aventis]
- [Teva]
- [UCB]
- [Ypsomed]

•Distributors/wholesalers

- [Amedis (Phoenix)]
- [Galexis (Alliance-Unichem)]
- [Voigt]

•Hospital/Pharmacy

- [Aarau]
- [Geneva]
- [Thun]
- [Bern]

•Associations

- [GSASA (Hospital Pharmacists)]
- [Patient Safety Foundation]

•Governmental bodies

- [Swissmedic]

GS1 Healthcare Accomplishments

- SmartLog project – reports to be validated
- Patient safety in Bedside Scanning process: first barcoded single dose arrive on the market



GS1 Healthcare Next steps

- Enhance information and promote bedside scanning
- Enhancement of distribution process : work with authorities on pandemic vaccination

GS1 Switzerland

Hauptspensoren / Sponsors principaux:

solid
Solid Suisse

DIE POST

Jetzt Termin eintragen und anmelden!
Réservez cette date dès à présent!

Standardisation
Collaboration
Information
Learning
Support
Events

GS1 Forum für Effizienz im Gesundheitswesen
Forum GS1 – efficience dans le domaine de la santé

Bedside Scanning
Patientensicherheit durch eindeutige Identifikation
Sécurité du patient par une identification univoque



GS1 Healthcare UK

Roger Lamb





GS1 Healthcare Product ID & Traceability

Pharmaceuticals

- Strong Recommendation by Purchasing and Supply Agency for GS1 bar coding , product ID number in 2004
- National Procurement eEnablement Strategy launched June 2007
- National Procurement eEnablement Delivery Group

Medical devices

- Terms of Trading for NHS Supply Chain for bar coding, product ID number
- Member of National Procurement eEnablement Delivery Group
- NICE guidance IP196 and HSC 2000/32 on Traceability of instruments (Appendix 8, Volume 2, Schedule 6)



Healthcare GS1 Healthcare UK

Established	September 2007
Priorities	<ul style="list-style-type: none">•Increased use of GTINs within Hospital Supply Chain (especially devices)
Work Teams	<ul style="list-style-type: none">•GDS and aligning the use of catalogues in the NHS and the NHS CfH Dictionary of Medicines and Devices.•Implementation of GLNs by the NHS to identify locations
Strategic Partnerships and Collaboration	<ul style="list-style-type: none">•Government Agencies•Industry Associations•Manufacturers/Suppliers•Healthcare Providers

Healthcare Main Participants

Rachel Hodson	Head of eProcurement PasA
Dr. Helen Lovell	Quality Strategy Team DH
Chris Ranger	Head of Safer Practice NPSA
Neil Lawrence	AIDC Project Manager NHS Connecting for Health
Mike Kreuzer	Director Technical & Regulatory ABHI
John Ferguson	Commercial Affairs Manager ABPI
Mike Stubbs	Director Bunzl
Bryan Semple	IT Solutions Director NHS Supply Chain
Jonathon Kay	Professor of Health Informatics City University
Graham Medwell	Information Manager Leeds Teaching Hospitals
Jenny Gough	Packaging Manager Molnlycke Healthcare
Alan Hounsell	Section Leader Smiths Medical International
Judie Finesilver	eBusiness Pharmacist PaSA

Healthcare Accomplishments

- 110 hospitals joined GS1 UK
- Working with DH on cross agency strategy
- Working with NPSA on patient identification
- Working with DH National Decontamination Team
- Working with Pharmacy National Advisory Board
- Holding joint Hospital and Supplier event in September 2008 event



Healthcare Next steps

- **Ann Keen MP, parliamentary under secretary for health services, has provided further support to the initiative by recommending the use of GS1 codes throughout the healthcare system, both for manufactured products and for coding systems used within healthcare settings. Speaking at the recent Patient Safety Congress in London she said, “We want to support the use of technology where this can lead to service improvement and are actively encouraging the uptake of coding in healthcare. We believe that this can help staff do what they want to do – deliver the right treatment, to the right patient, at the right time. We know it works – patient safety is improved and, therefore, we have recommended the use of GS1 codes.”**





GS1 Healthcare **Next steps**

- Extension of GS1 activity in Home Countries
- Discussions with Independent Healthcare Providers





GS1 Healthcare US

Dennis Harrison
President, GS1 Healthcare US





Product ID & Traceability

Pharmaceuticals

- Bar codes (GTINS) on all pharmaceuticals – April, 2006
- 95% of manufacturers use GS1 system
- FDA: RFID allowed on solid dose medications
- Traceability:
 - Florida – As of July, 2006 – Non ADR's must pass Pedigree
 - FDA – As of December 2006 – All non authorized distributors (ADR) must pass Pedigree
 - 17 states require Pedigree
 - FDA must choose or develop unique identifier by April, 2010
 - California – 2011 – All participants must pass Pedigree – all items serialized

Medical devices

- No current regulations
- 85% of manufacturers use GS1 system
- FDA must choose or develop unique identifier by April, 2010
- Traceability: Limited activity



GS1 Healthcare GS1 Healthcare US

Established	1/01/08
Work Teams	<ul style="list-style-type: none"> • Product Identification (GTIN) • Location Identification (GLN) • GDSN Implementation • Traceability Adoption • Application & Implementation <ul style="list-style-type: none"> • Communication Advisory Team • Weekly Teleconferences • Quarterly Face to Face Meetings
Strategic Partnerships and Collaboration	<ul style="list-style-type: none"> • CHeS - Coalition for Healthcare eStandards • HSCSC - Healthcare Supply Chain Standards Coalition • SMI - Strategic Marketplace Initiative • AHRMM – Assoc. for Healthcare Resource and Materials Mgmt. • HIGPA - Health Industry Group Purchasing Association



Healthcare

GS1 HC US

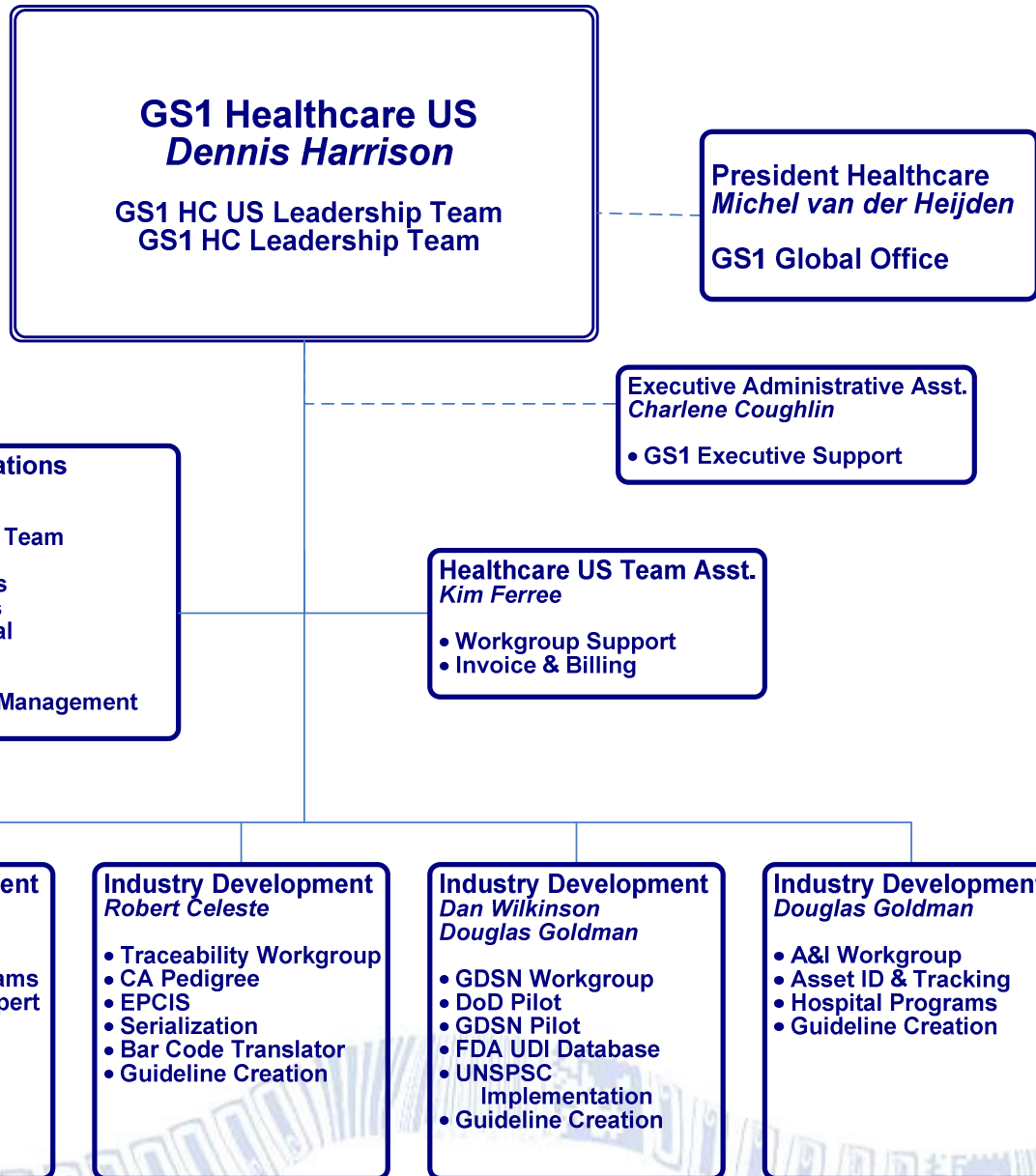
“Ad hoc” Leadership Team

- AHRMM – Deborah L. Sprindzunas
- Amerinet – Mary Beth Lang
- Becton Dickenson – Dennis Black
- Johnson & Johnson – Michael Rose
- Mayo – Joe Dudas
- McKesson – Ron Bone
- Novation – Dennis Byer
- SMI – Dennis Orthman
- Univ. Kentucky Medical Center – Jean Sargent
- Walgreens – Steve Addante





2008 Organization Chart





Healthcare Participants

Manufacturers

3M

Abbott Labs

Alcon Labs

Amgen

Amphastar Pharmaceuticals

Apotex

Baxter

BD

Becton Dickinson

Bristol-Myers Squibb

Covidien

Genzyme Corporation

GlaxoSmithKline

Hospira

Johnson & Johnson

Kyowa Pharmaceutical, Inc.

Medimmune Inc.

Medline

Medtronic

Merck

P&G

Pfizer

Purdue Pharma

Sage Products

Teva Pharmaceuticals USA

Upsher-Smith Laboratories, Inc.

Solution Providers

AAkar Technology Inc

Accenture

Acsis Inc.

Aegate Ltd

Authentix Ltd

Axway

Booz Allen Hamilton

Deloitte Consulting, LLP

Domino Amjet

Edge Dynamics

Elge Inc.

GHX

Globe Ranger

IBM

Infosys

Inmar/MedTurn

Lawson Software

Maxiom Consulting Group, Inc.

Medical Imaging & Technology Alliance

RfXcel Corporation

SAP Labs, LLC

Sensitech

Suppliescape

Unisys North America

VCG & Associates



Healthcare Participants (Continued)

Associations

ASHP - American Society of Health System Pharmacists
AHA - American Hospital Association
AHRMM - Assoc. for Healthcare Resource & Materials Mgmt.
CheS - Coalition for Healthcare eStandards
GPhA - Generic Pharmaceutical Association
HDMA - Healthcare Distribution Management Assoc.
HIDA - Health Industry Distributors Association
HSCSC - Healthcare Supply Chain Standards Coalition
NACDS - National Association of Chain Drug Stores
National Coalition of Pharmaceutical Distributors
NCPDP - National Council for Prescription Drug Programs
SMI - Strategic Marketplace Initiative
VCG & Associates
Verisign

Government Agencies

DoD - Department of Defense
FDA - US Food and Drug Administration
US Army

Third Party Logistics

MedTurn

GPOs

Amerinet
Medassets
Novation
Premier

Distributors

AmerisourceBergen Corporation
Cardinal Health
McKesson US Pharmaceutical
Owens & Minor
US Oncology

Retailers

CVS Caremark
Target
Walgreens
Wal-Mart

Hospitals

Ascension Health
Geisinger Health System
Intermountain Healthcare
Mayo Clinic
Norton Healthcare
Novant Health
Ridgeview Medical Center
Sentara
Sisters of Mercy (ROI)
University Healthcare System Augusta (UHCS)
University of Kentucky Medical Center
Veterans Administration Hospital

Healthcare Accomplishments

- Formed GS1 Healthcare US – Vision, Mission, Charter
- Held first Workgroup Forum – 3/11-3/12/08
- Second Workgroup Forum – 7/23-7/24/08 in San Antonio, Texas
- Completed Workgroup plans
- Completed Phase 2 of the Minnesota GLN Pilot
- Submitted 27 page and 43 page responses to the FDA regarding Unique Identifiers and Drug Traceability.
- Continuing to meet monthly with the California Board of Pharmacy (date moved from 2009 to 2011).
- Created a marketing campaign
 - “Are You Ready?”
- Building Patient Safety



GS1 Healthcare US 2008 Strategic Plan: Global Data Synchronization Network® (GDSN®) Workgroup

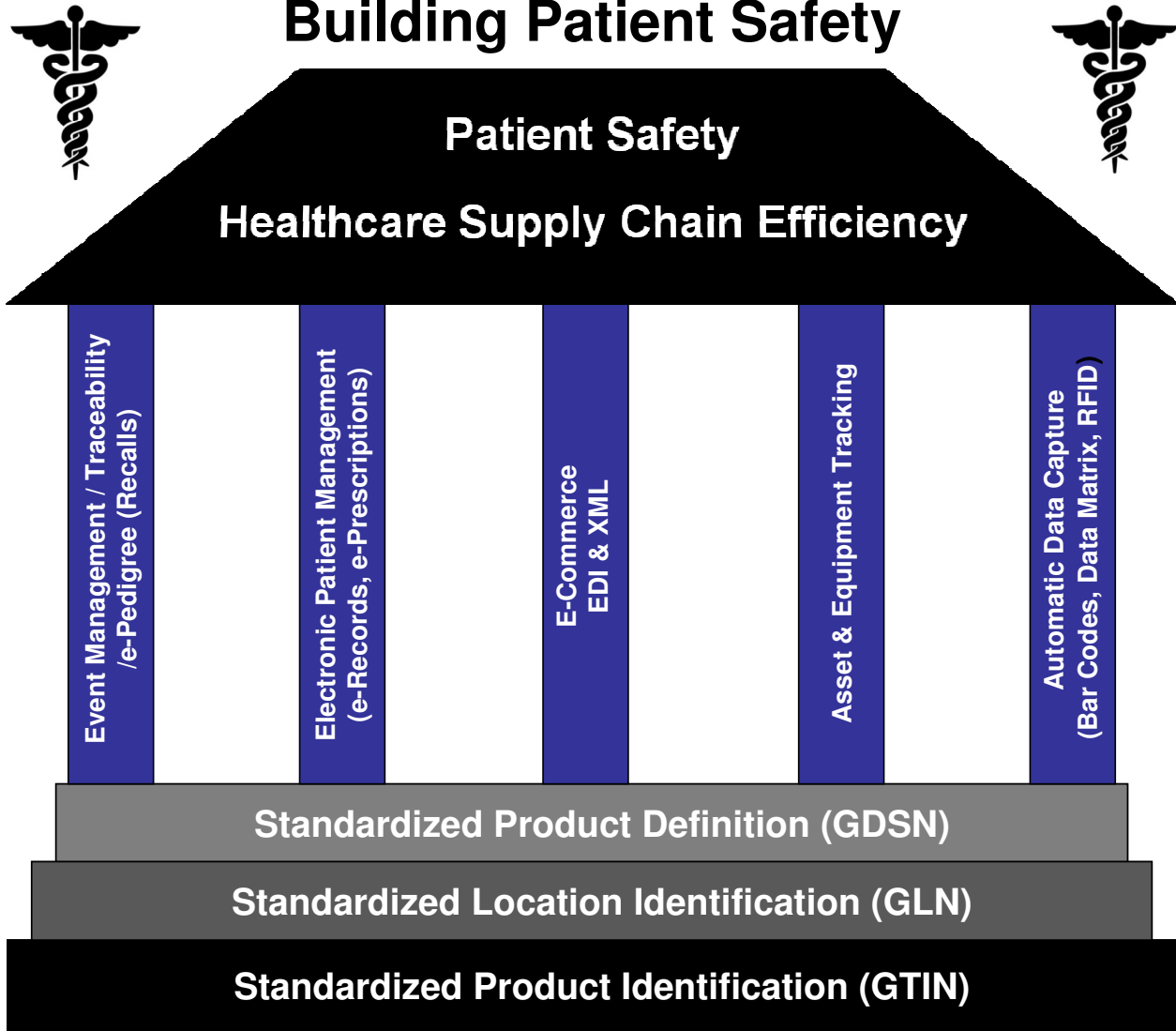
Mission: Accelerate the adoption of GDSN standards in U.S. Healthcare and ensure data accuracy.

Strategies	Initiatives	Deliverables	Due Date: Status
1. Formalize Global Data Synchronization Network (GDSN) workgroup.	<ul style="list-style-type: none"> ○ Develop & approve mission for the workgroup. ○ Develop & approve workgroup plan. ○ Complete integration of GS1 Healthcare US GDSN and HSCSC data sync workgroups. 	<ul style="list-style-type: none"> ○ Publish mission. ○ Publish workgroup plan. ○ Integrate meetings. 	<p>Q1 2008: Complete</p> <p>Q2 2008: Complete</p> <p>Q1 2008: Complete</p>
2. Define requirements for implementation of GDSN standards.	<ul style="list-style-type: none"> ○ Define U.S. requirements for the GDSN global standard. ○ Develop attribute requirements/recommendations. 	<ul style="list-style-type: none"> ○ Deliver requirements to GS1 Healthcare. ○ Publish attribute list. 	<p>Ongoing</p> <p>Q2 2008: Complete</p>
3. Create communication tools and provide information necessary for stakeholders in U.S. healthcare to understand how to trade using the GDSN.	<ul style="list-style-type: none"> ○ Develop GDSN Tool Kit to include: <ul style="list-style-type: none"> ▪ GDSN Package Measurement Requirements. ▪ GTIN Healthcare Allocation Rules. ▪ U.S. Market Attributes for Healthcare. ▪ Cost elements ▪ Healthcare industry communication templates for all early adopter participants (Mayo, Ascension Health). ○ Review and promote GS1 Healthcare US webinars about standards in healthcare and GDSN. 	<ul style="list-style-type: none"> ○ Publish Provider Tool Kit. ○ Conduct webinars. 	<p>Q2 2008</p> <p>Q4 2008</p>
4. Coordinate GDSN promotional activities with specific healthcare associations.	<ul style="list-style-type: none"> ○ Review and promote communications developed by GS1 US in collaboration with multiple healthcare organizations, including AHRMM, CHeS, HSCSC, HIDA, SMI, HDMA, HFMA & ADVAMED. ○ Review and promote case studies and/or summaries of key findings about the following GDSN pilots: <ul style="list-style-type: none"> ▪ Dept. of Defense ▪ Global Pilot 	<ul style="list-style-type: none"> ○ Publish summary of communications. ○ Publish summary and key findings. 	<p>Ongoing</p> <p>Q2 2008</p>
5. Connect with global activities.	<ul style="list-style-type: none"> ○ Monitor, review & comment on global information from GS1 Healthcare. ○ Demonstrate global interoperability of the GDSN by connecting DoD participants to trading partners outside the U.S. (e.g. Australia). 	<ul style="list-style-type: none"> ○ Report feedback to GS1 Healthcare US. ○ Write summary of success. 	<p>Ongoing</p> <p>Q2 2008</p>



- Formed GS1 Healthcare US – Vision, Mission, Charter
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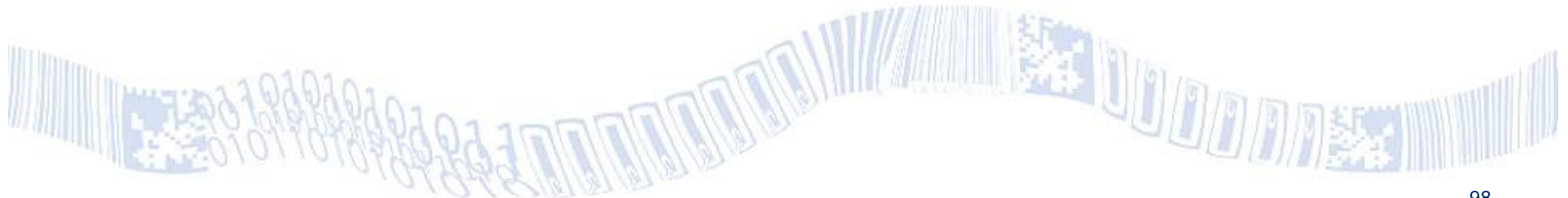




Standardization → Interoperability



- Continue to build GS1 Healthcare US membership
- Continue working the Workgroup plans
- Embrace hospitals
- Complete tool kits
- Grow the GLN Registry for Healthcare
- Create a Healthcare video
- Continue to move DoD GDSN participants into production
- Participate in the Global GDSN pilot
- Develop a hospital implementation team (consulting)
- Continue working with the California Board of Pharmacy





**GS1 Healthcare US Community wants -
Less Talk, More Action!**

**GS1 Healthcare US Is All About
Implementation!**





Back-up





Healthcare Healthcare in New Zealand

Population	4,267,442* & 40 mil Sheep
Healthcare system	Combination of Public and Private
Healthcare expenditure (per capita)	NZ\$3728.00 (MoH 2006) NZ\$ = €0.49c
Healthcare expenditure (% of GDP)	9.45 % (MoH 2008)

Key Government Strategies

- The [New Zealand Public Health and Disability Act 2000](#) established the [New Zealand Health Strategy](#) and the [New Zealand Disability Strategy](#) as the key policy documents for the health and disability sectors. Under these overarching strategies are population-based strategies and service-based strategies.
- Population-based strategies include the [Health of Older People Strategy](#), [He Korowai Oranga – Māori Health Strategy](#) and the [Pacific Health and Disability Action Plan](#), while service-based strategies include the [Primary Health Care Strategy](#) and the [New Zealand Palliative Care Strategy](#).

* 13th June 2008



Healthcare Healthcare in Australia

Population	21.2 million (as at Jan 2008) ¹
Healthcare system	Combination of public and private
Healthcare expenditure (per capita)	\$78,598 million AUD (as at 2003-4) ² \$ 3,707 AUD per capita ² 1 Australian dollar = 0.60 Euros
Healthcare expenditure (% of GDP)	9.6 (as at 2004) ³

Main challenges in healthcare re. patient safety and efficiency:

- Ensuring accurate master data
- Supply chain efficiency – accuracy in communication and physical delivery
- Ensuring the correct drug, in the correct dose, is supplied to the patient
- Aligning medicines and device terminology throughout Australia

¹ Australian Bureau of Statistics

² Australia's Health, 2006

³ World Health Organisation



Healthcare Healthcare in Austria (based on OECD figures)

Population	8,340.924
Healthcare system	<ul style="list-style-type: none">•Social health insurance scheme is compulsory – covering 99% of popul.•Access for every citizen to medical + social services on the basis of legal compulsory insurance•Social security system composed of legal health insurance, accident and pension insurance•Financed by social insurance entities + various territorial bodies
Healthcare expenditure (per capita)	\$ 3.500,-
Healthcare expenditure (% of GDP)	10.3% 2/3 of this sum was paid for by the Austrian “Sozialversicherung”



Healthcare Healthcare in Austria

Priorities wrt patient safety:

- Increasing awareness for global marking in healthcare – especially politics
- Motivating stakeholders for active participation
- Counterfeiting and online trading – currently most discussed issues in Austria



Healthcare Healthcare in France

Population	63,573,000
Healthcare system	Public & private
Healthcare expenditure (per capita)	€ 3, 318
Healthcare expenditure (% of GDP)	11%





Healthcare Healthcare in Germany

Population	82.689.000
Healthcare system	combination of public and private
Healthcare expenditure (per capita)	3171,3 \$
Healthcare expenditure (% of GDP)	10,6 %

Main challenges in healthcare re. patient safety and efficiency:

- Improve patient safety
- Save money and improve supply chain efficiency
- Auto-ID
- Traceability effectively
- Catalogues
- Classification
- EDI
- Patient record



GS1 Healthcare Healthcare in Russia

Population	148 mn
Healthcare system	Public hospitals – ca. 10,000, private hospitals – ca. 500
Healthcare expenditure (per capita)	US\$ 186.5
Healthcare expenditure (% of GDP)	4-5%





Healthcare Healthcare in Serbia

Population	7,5 milions
Healthcare system	Dominant is Public system but Private is also in rise
Healthcare expenditure (per capita)	230 EUR
Healthcare expenditure (% of GDP)	NA





Healthcare Healthcare in Slovakia

Population	5 milion
Healthcare system	Public and private
Healthcare expenditure (per capita)	300 US\$ 1.5billion \$
Healthcare expenditure (% of GDP)	11%

Priorities wrt patient safety:

- Implementation of eHealth strategy - electronic patient record, interconnected database for hospitals, pharmacies, distributors





Healthcare Healthcare in Switzerland

Population	7'252'000
Healthcare system	Combination public-private ¹
Healthcare expenditure (per capita)	4011 US \$
Healthcare expenditure (% of GDP)	11.5

Priorities regarding patient safety:

- Foundation for patient safety ► learning with errors, enhancing error reporting systems, etc.
- Increased awareness about bedside scanning ► high risk drugs start to be labelled at unit level (injections, blisters)

¹ On June 2nd, 2008, a federal votation rejected that hospital should be funded exclusively by health insurances. Public hospitals are today funded by cantons for the investments and by the insurers for the care delivered to the patients (DRGs for in-patients and fees for service for out-patients)



Healthcare Healthcare in UK

Population	60,776,238 (2007 estimate)
Healthcare system	Free at the point of need
Healthcare expenditure per capita	£1500
Healthcare expenditure (% of GDP)	8.2%

- Main challenges in healthcare are patient safety and efficiency:
 - Medication errors – Coding/Scanning & Positive Patient Identification
 - Iatrogenic infection : human vCJD – Marking and Traceability
 - Supply chain inefficiencies – Product marking & Data Synchronisation